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BY J. CLARK JEFFERSON, A.R.S.M., W.E.S.C.,

Mining Engineer, Wakefield.

(Formerly Student at the Royal Bergakademie, Clausthal.)

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SECTION IV.

UNDERSTOPPING.

This method is, perhaps, the oldest way of working out metalliferous deposits, and is still found in some districts, especially in Cornwall. The oldest mode of commencing this work was to excavate a sort of sump, or breaking-in, at the most favourable place in the floor of the level, corresponding to the rise in the case of overstoping. The sump is generally carried down somewhat deeper than the depth of a stope, and from the two corners thus formed the first length of stoping is taken out on both sides (understoping being in almost all cases double sided—carried on on both sides of the sump or shaft), whilst the sump is again deepened by the depth of a stope. The first depth of stoping is now carried forward on both sides for a second length of stoping, whilst the first length of stoping in the second depth of stoping is being excavated on both sides of the sump, and the sump is carried down a third depth of stoping. The first stope is now carried forward a third length of stoping, the second depth of stoping is carried forward a second length, whilst the third depth of stoping is begun at each side of the sump, and the sump itself is being sunk the fourth depth of stoping, all these operations being carried on simultaneously. In the next stage of operations the first stope is carried forward for the fourth length, the second stope for the third length, the third stope for the second length, the fourth stope for the first length, and the sump for the fifth depth of stoping, all simultaneously. The sixth stage of operations comprises the simultaneous carrying forward of the first stope for a fifth length, the second stope for a fourth length, the third stope for a third length, the fourth stope for a second length, the fifth stope for a first length, and the sump for the sixth depth of stoping.

The vertical, or nearly vertical, portion of the stope is called the breast, and the horizontal, or nearly horizontal, portion the sole or floor of the stope. At first it was usual to carry the breast perfectly vertical and sole perfectly horizontal; especially was this the case when fire-setting was resorted to. More lately the practice has been to make the sole dip slightly downwards towards the next stope below, and to make the breast inclined also, so that the angle enclosed by the sole and breast shall be obtuse, but not greater than 120°. The reason for this is the greater facility with which the breast can be thus worked forward. The presence of slips or planes of division in the deposit is not of so much importance as in the case of overstoping, though when these run nearly horizontal, or nearly vertical, advantage may be taken of them on one side or other of the stoping to form the plane of the sole and the breast in the same general directions. Before the introduction of blasting powder the length of a stope varied usually between 4 ft. and 6 ft., and the height of the breast from 30 in. to 4 ft. Since the introduction of powder the size of the stopes has been vastly increased, the sole varying in length from 25 ft. to 40 ft., and the breast from 6 ft. to 10 ft. in height. The relative proportion between the height of the breast and the length of the sole is usually as 1 to 2 or 1 to 3, though it varies between 2 to 3 and 1 to 4. In the case of valuable ores it is customary to remove as much as possible of the vein stuff before blowing down the ore. The attle has to be piled upon rows of stempels covered with split wood. Generally one row of stempels will be inserted for every second stope, following the stope at a sufficient distance to keep a travelling road close to the face of the stopes. When the lode is very wide and highly inclined it may be necessary to place one row of stempels for every stope; whilst, on the other hand, where the lode is thin, and has a comparatively slight inclination, one row of stempels for every third or fourth stope may suffice, since the weight resting on the timber will not be so great. The stempels are often driven into position without foot or cap pieces, sometimes they are notched in the walls of the lode, or when the lode is comparatively wide rafter timbering may be used. All these kinds of timbering have already been described.

The central portion, which is continuously excavated as a sump, is timbered on both sides, and the attle packed behind the timbering, so as to form a shaft or winze, a windlass being usually fixed in the level above over the mouth of the shaft. In this shaft the ore is drawn up from the sump and the lowest stopes. When the amount of attle is insufficient to fill up all the empty space it is often usual to leave a level open through the attle packing, which can be used for travelling or conveying the ore to the shaft. When such is the case great care must be taken to support the roof of the level, the stempels being often placed much nearer together. The most usual mode of conveying the mineral to the level above is to leave small shafts (passes) open through the attle, each pass being provided with a bucket and hand windlass, in which the ore is drawn up to the level above, and also with a ladder for the men. These passes are sometimes put in at every second stope, and in other cases at distances of 30 to 40 yards apart, when they take more the character of a shaft or winze. When, as mentioned above, levels are left through the attle packing, the use of passes and windlasses at short distances becomes unnecessary, the ore being carried along the levels to the shaft.

Hitherto we have spoken of understoping as being commenced from a sump and carried down in solid untouched ground. It will be evident, however, that this mode of working a lode can be commenced on one or both sides of a shaft which connects two adjoining levels. The best modern practice of understoping consists in dividing the mine into sections by means of levels, and shafts or winzes, so arranged that the water runs by gravitation towards the shaft in channels generally cut in the sides of the level, without having, as we have supposed in the first case, to be lifted from the sump to the level above, where if the floor of the level is formed by attle packing, wooden channels will have to be provided to carry off the water to the shaft. This mode of arranging the mine for understoping possesses the advantage that the mineral can be lowered by hand to the level beneath, and then transferred to the shaft, so that all raising of the mineral by manual power is avoided. It is not always the case that an upper and a lower level are connected by winzes before and from which the stoping is commenced, since in the case of open easily worked ground the water will drain through into the level below, and no water will be met with in the sump when the understoping is commenced from a sump instead of a shaft. When the mine is worked by underhand stoping, in the primitive fashion, the whole of the bottom of the mine forms a series of stopes, all above, being timbered or packed with attle, so that the exploratory work is not distinct from the actual working away of the ore, thus leaving no resources, or rather not finding any, and a considerable portion of dead ground is worked away in stopes, which if explored by a level below would have been proved to be not worth working. Another great evil entailed was that all the water drained over the lowest stopes, and had to be pumped from the lowest level in the pit.

In the old method great difficulty is met with in ventilating the lower workings, since the current must first be made to descend down the one set of stopes before ascending the stopes on the opposite side of the sump.

In some of the coal districts of the Continent the great inclination of the coal seams renders some method of stoping the best for the extraction of the coal. As an example of understoping in the case of coal seams, that of the highly inclined right wings of the coal seams in the Worm district, near Aix-la-Chapelle, was cited in the lectures. The seams are opened out by means of levels 8-37 metres (9 yards) vertically apart. A safety pillar, from 2 ft. to 3 ft.

in thickness is left below each level, being still further supported by two rows of stempels immediately below the pillar, each pair of stempels being placed 2 ft. apart. The stempels or props next the pillar are let into the sides (respectively roof and floor), those immediately below, which are only 1½ in. in diameter, are notched only in the floor, being driven up tight against the roof with the insertion of a cap. The working away of the coal is begun by making a breaking-in, from 2 ft. to 3 ft. wide, in the floor of the level, which is carried so far down that sufficient room is obtained to enlarge the opening thus made on both sides, except the first, 2 ft. to 3 ft., as above mentioned, are left for a safety pillar. The coal is then worked out on both sides in a series of underhand stopes from 5 to 6 feet in depth, each stope being followed up by a row of stempels placed 2 feet apart, the stempels thus running in horizontal rows 5 to 6 feet apart, and in vertical rows 2 feet apart; the timber as a rule is not got, being left in the goaf as the roof crushes in. As we have above mentioned the method of understoping was formerly universal, whilst at present the method of overstoping is the most prevailing. The following comparison will indicate the reasons that have led to this change.

ADVANTAGES OF OVERSTOPING.—1. The tendency of the ground to break down of itself.—2. The miners have not to throw the attle up on to the timbering.—3. The ore can be thrown down instead of having to be drawn up by manual power.—4. The breakage of timber supporting the attle packing, and the consequent giving way of the attle packing, is less dangerous than in the case of understoping, since the miners are standing upon in the first case, and under it when understoping is carried on.—5. The packed attle sets, and can be piled more firmly in the case of overstoping than when it has to be thrown up as in the case of understoping.—6. Less timber is necessary, and this is mostly temporary.—7. The ventilation is more easily and readily effected, which is of great importance in the case of coal seams in which fire-damp occurs.—8. In the case of coal seams the coal is not spoiled by the men standing upon it.—9. The water is carried off by the level next below, to the shaft, instead of sinking to the lower levels from which it must be pumped, so that the average height to which the water has to be pumped is kept at a minimum.

ADVANTAGES OF UNDERSTOPING.—1. The working away of the mineral can be at once commenced without any previous deadwork as soon as paying ground is reached.—2. Heavier hammers and tools can be used, the miner's position being much more convenient, and the labour being directed downwards is much easier than in the case of overstoping.—3. Loss of ore is more easily avoided.—4. The miners are not liable to be injured by unexpected falls of veinstuff or ore, owing to planes of division in the lode.

DISADVANTAGES OF OVERSTOPING.—1. The mineral cannot be extracted until a level has been driven below it, and consequently a large amount of dead capital must be invested in the mine.—2. It is impossible to avoid some loss of ore among the attle packing on which it falls.—3. When slips occur in the lode overstoping is sometimes dangerous.—4. The work in an upward direction is extremely inconvenient.

DISADVANTAGES OF UNDERSTOPING.—1. All the attle, and in many cases the mineral, must be thrown or handed up by manual power.—2. The lower part of the workings will be continually troubled by the presence of water, which has not only to be pumped from a much greater depth, but also partly raised out of the stopes by manual power.—3. The ventilation of the lowest working places is extremely difficult, hence in coal mines giving off fire-damp this method is inapplicable.—4. A large amount of timber which can seldom be recovered is required, which renders the method extremely difficult to manage in wide lodes. It is to the great saving of timber in the case of overstoping that the prevalence of overstoping over understoping is due.

YORKSHIRE COLLEGE—COAL MINING DEPARTMENT.

The work of this department of the college for the session 1878-9 has now concluded. Amongst the students this session some had attended the previous session, and others only the one just terminated. Of the two year students, Mr. J. P. Houghton, of Garforth, obtained the first certificate and prize; and Mr. Turnwell D. Turner, of Wheldale Colliery, the second certificate. Of the one year students, Mr. Walter Fife, of Shipley, obtained the first certificate and prize; and Mr. Thos. Reeves, of Whitwood, the second certificate. The work of the session has included twenty-six lectures, three examinations, and three days inspection of collieries. The first of these inspections was on July 3, on the morning of which day the students, accompanied by the instructor, Mr. Arnold Lupton, visited Messrs. Briggs's New Silkestone Colliery, by the kind permission of Mr. Wm. Bruton, the manager. The inspection of the magnificent plant and the well-planned underground works gave great interest and instruction to the visitors. The party then went to Messrs. Pope and Pearson's West Riding Colliery, where, through the kindness of Mr. Fisher, the manager, they were taken down the Silkestone Pit, and there saw a most complete and excellent system of underground haulage by steam power, and showing the application of the endless chain system; they also travelled through some of the intake and return air-ways and some of the working places. The second excursion was to the Barrow Colliery, near Barnsley, which visit the party owed to the courtesy of Messrs. G. J. and A. R. Kell, mining engineers, of Barnsley, the engineers of the colliery. This colliery is sunk down to the Thorncliffe and Silkestone seams, and the plant is extremely fine. The party spent a considerable time underground (when Mr. Bevers kindly took them under his charge) studying the system of working the coal and the improved appliances which are here in use, and concluded an interesting day's work by a long drive through Hoyland and Wombwell on their return. The third excursion was to the New Oaks Colliery, permission to visit which was obtained by the kindness of Mr. J. E. Mammatt, the consulting engineer. Mr. James Wilson, the manager, provided for the party a most instructive programme, which included an inspection of the ventilating plan, exhibiting one of the most complete systems of ventilating a mine that can be found in the country. Then followed a series of experiments with safety-lamps, and afterwards the party descended the mine, which they traversed to its extreme points, and observed the system of working the coal, both "bord" and "end." The hauling machinery, including an hydraulic engine, was next viewed, and the very large intake and return air roads, which enable the enormous ventilation to be obtained with a very small amount of power in comparison to the amount of wind. The proceedings concluded with a lunch supplied by Messrs. Cammell and Co., the owners of the colliery, and the party separated after many thanks to Mr. Wilson for the instruction he had afforded them.

In receiving the students Mr. Wilson gave the following address: It gives me much pleasure to meet your esteemed and able leader Mr. Lupton, who, I know, will give you all the necessary instructions to fit you for the very important calling you are being prepared for. We must ever remember that we reap the advantages and blessings of the labours of those who have gone before us, if we achieve one great object we must not forget that it has been made by self-sacrificing men true to their principles; aye, even unto death. The Oaks Colliery were established in 1835. The oldest colliery in the Barnsley district is the Old Silkestone, belonging to the late Mr. R. C. Clarke, the owner of Old Silkestone Colliery, whose grandfather was the first to work to any extent in this district in the year 1770. The seam is in some places 1 ft. 6 in. thick, of the best house and gas quality in the trade. At the old Oaks Pits there are three shafts down the Meldon Field coal, which is 3 ft. 2 in. in thickness; not much of this coal has been worked for the last 120 years. There are also three shafts down to the Barnsley seam, one for upcast and two for downcast, 6 ft. 6 in. in diameter. The upcast is 10 ft. 4 in. in diameter, worked by two small 6 ft. 6 in. furnaces, fed by fresh air, and producing 200,000 cubic feet per minute. At new Oaks there are two 12 ft. diameter shafts, each belled out from 80 ft. above the bottom to 20 ft., and 337 yards to the Barnsley seam. The ventilation is worked by a Gulfa fan 40 by 12 ft., producing 220,000 cubic feet per minute. The length of road-ways open for horses and wind is 55 miles, with 700 acres of goaf worked. Had charge of collieries in Durham and Yorkshire for 30 years, and under the ablest men in the mining profession, and have served with the first inspectors up to the present, and must after all confess there is still something to learn to keep from us those fearful accidents which happen in our coal mines. But when we come to look back into the past 100 years, and see what science has done in the management of collieries, we may say that your privileges at the time are great. You have the lives and opinions of the best men we have had in the coal trade for the last 800 years, or at all events since coal was found to be of any practical use by the ancient monks up to the present time. In 1835 a patent was granted to Mr. David Ramsey for the discovery of an engine.

In 1849 Mr. Beaumont brought out wagons and wood railways; in 1876 chain pumps were working; 1890 water-wheels and chain buckets in use for raising water

from the mines; in 1700 water still raised by horses, the axle extending across the pit; in 1718 all the pumps built of wood, and strapped the same as a tube; in 1765 Mr. Speeding introduced a steel mill, which I now show; in 1760 Mr. Speeding introduced the coupling of the air up two or more bords at one time through the whole of the workings; in 1760 we had an engine working below ground drawing coals on level; in 1833 Thomas Y. Hall put in cages and conductors in the pit shafts; in 1840 Mr. Biddle found out the system of splitting the air into several sections. You have every inducement to cheer you on with this work. You must not be cast down, but reconcile yourselves that the great work which you have to fit and prepare yourselves for must be done through perseverance and energy, as no man can be fitted or prepared for the management of a colliery except he puts himself to hard study and work. No subject can be of more importance to owners, managers, and miners than an adequate supply of air to every part of the mine. It is essential to health in active respiration. It is a function of the very utmost importance to the animal economy. It cannot be interrupted or stopped for a very few minutes without death ensuing. Any defect in the quantity or quality of the air is injurious to health.

A healthy person inhales about 330 cubic inches per minute, consuming about 32 cubic inches of oxygen, and discharging about 25 cubic inches of carbonic acid gas per minute. You see, then, the most important necessity for having a good circulation of air in a coal mine to render them safe from explosions of fire-damp, good ventilation is needed. Now, how is ventilation to be produced? There is at all times a pressure of nearly a ton to the square foot in every direction of the air near the surface of the earth owing to the weight of the air above it. We must either increase the weight of the air above, or lessen the amount of pressure, in order to put the air into motion. It is only the amount of this increase or decrease that puts the air in motion, and overcomes the friction in mines. Take two pits or shafts of equal depths, and having their tops and bottoms on the same level, extending from the bottom of one shaft to the other. Now you have the weight of air in each shaft equal, bulk for bulk. The two columns balance each other. No motion of the air is observed. No ventilation is produced without some artificial means. The artificial means used at the present time are furnace, steam jet, and fan. These few brief remarks give you some faint idea of early coal mining in our country, and of the present state of ventilation at these collieries. Trusting that you may be benefited by the present visit to these collieries.

The next session of this department will commence next October. In concluding this notice we may call the attention of our readers to the following extract from the last report of Mr. F. N. Wardell, Her Majesty's Inspector of Mines:—Referring to the coal mining department of the Yorkshire College, he observes that it "will be the means of inculcating good, sound, practical mining knowledge amongst those who will eventually become managers and agents in the district." We hope that this expression of opinion on the part of Her Majesty's Inspector will have due weight, and that attendance on some such course of lectures and instruction as that which has been provided by the Yorkshire College will soon come to be considered as part of the ordinary training of a coal mining engineer or colliery manager.

THE ANGLO-AMERICAN FOOD SUPPLY.

Notwithstanding the unusually unfavourable season we have this year had in Europe, there is comparatively little chance of any serious inconvenience being felt in connection with the food supply for the coming winter owing to the enormous productive capacity of the United States and Canada, and the vast improvements which have been made not only in the speed of transit but also in the methods of preserving food stuffs during lengthened journeys. Taking advantage of the excellent market for American food stuff in Great Britain several extensive undertakings both in Canada and the United States, some in the hands of private capitalists and some in the hands of public companies, are being carried on with the utmost energy, and are yielding enormous profits to those concerned. It is now proposed to secure some of these profits for this side of the Atlantic, and with this object the Anglo-American Food Supply, General Stores, and Trading Company has been formed with a capital of 150,000£, in shares of 1£ 10s. each, with the intention to establish stores in London and elsewhere, where a full supply of the products will be kept and sold for ready money. It is pointed out that the leading feature of the company will be to supply the public with an extensive assortment of the celebrated articles of food produced and prepared in America, Canada, and other countries. The company will always have on hand a large stock of American and Canadian beef, mutton, game and poultry, as well as of butter, cheese, lard, bacon, hams, tongues, flour, wheaten grits, oatmeal; preserved meats of all kinds; canned fish of every variety; oysters, fresh, canned, and pickled; fruits preserved and bottled; canned vegetables, such as tomatoes, peas, asparagus, and every variety grown in America and Canada. Arrangements will be made to have these various articles specially prepared for the company. The hams, bacon, and tongues will be of a superior quality, and the best brands of American flour will be imported for family use. All the Californian fruits will be kept in large supply and preserved expressly for the English market, all of which will be sold at low prices, the object of the company being to give the public an opportunity of procuring these food supplies at a very reasonable rate. English products will also be dealt in, and suitable arrangements will be made to obtain the same direct from farmers and other producers.

From the prospectus, which appears in another column, it will be seen that the company will have a resident managing director in America, who, from his long residence there, combined with a mercantile experience of twenty-five years, thoroughly understands the American and Canadian markets, and who will keep the stores here constantly supplied with all the articles and goods proposed to be dealt in. Through the special arrangements that will be made by the resident director in America the company will be enabled to bring the producer and consumer into immediate contact, and thus avoid the employment of agents and the usual attendant expenses. The great food centres of America will, therefore, be brought almost to the doors of the consumers. An important branch of the company's business will be the establishment of a bakery on an extensive scale, and on the most improved principles, for supplying the public with cheap, pure, and well-made bread of every description.

As an instance of the magnitude of the supply of food from America, it may be stated that one firm in St. Louis are now killing and canning daily 1000 head of cattle, the most of which is shipped to England. The buildings occupied by this firm are one mile and a quarter in length. There is also a flour mill in St. Louis that is turning out 1750 barrels of flour per day. The food supplies exported from America last year amounted to over 100,000,000£. Through this company the public will, it is remarked, be able to obtain these supplies at very low prices, as they will be bought direct from the producers, and will not pass through the hands of agents. It is understood that all the purchases made by the company will be for cash, and as they will only sell for cash a safer business cannot well be imagined. The demand is almost boundless, and it is not unreasonably urged that the shares of a well-organised company such as this should certainly prove a remunerative investment. Quick sales for cash and small profits is the true principle of conducting business, particularly in respect to food supplies. And upon these grounds it is claimed that the present company is an undertaking that should commend itself to capitalists, while at the same time the company will be a boon to the people of this country, for at present, notwithstanding the immense importations of American food, the public have not derived the benefit they should have done, as prices have been kept up by the dealers.

CORNISH PUMPING ENGINES.—The number of pumping-engines reported for June 16. They have consumed 1903 tons of coal, and lifted 14.3 million tons of water 10 fms. high. The average duty of the whole is, therefore, 50,000,000 lbs. lifted 1 ft. high, by the consumption of 112 lbs. of coal. The following engines have exceeded the average duty:—

	Millions	50-6
Mellancar—76 in.	50.6	50.6
Mellancar—Gundry's 8 in.	50.6	50.6
West Bassett—Thomas's 80 in.	50.6	50.6
West Wheel Franch—58 in.	50.6	50.6
West Tolgus—Richard's 70 in.	50.6	50.6
West Wheel Seton—Harvey's 85 in.	50.6	50.6
West Wheel Seton—Rule's 70 in.	50.6	50.6

HOLLOWAY'S PILLS AND OINTMENT—JUSTLY FAMOUS.—For more than forty years these medicaments have been esteemed the most efficacious remedies for impurities of the blood ever discovered. Experience has shown that they not only restore but also preserve health, removing all glandular obstructions, old sores, and disorders arising from an impure state of the blood, and for pimples, face, and all scrofulous eruptions and blotches, they are unparalleled. Their efficacy is unaffected by lapse of time, and as they keep good in all climates they should never be omitted by a store of ship captains, out of emigrants, explorers, and travellers of all kinds. They are an immense boon to all sick and afflicted persons.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergsrath Dr. von Gumboldt, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

EIGHT PER CENT. DEBENTURES.

Central Pacific Coal and Coke Company, Limited.

EIGHT PER CENT. RAILWAY DEBENTURES of £100 each for £90, redeemable at par by annual drawings. Interest payable half-yearly in London.

AN ENGLISH COMPANY has PURCHASED the WELL-KNOWN SAN PETE COAL-FIELD and the CHARTER and PROPERTY of the SAN PETE VALLEY RAILWAY, situated in UTAH, U.S.A.

Estimated value of the property, including the railway about to be completed, £512,030.

This vast deposit of bituminous coal has been inspected and most favourably reported upon by Mr. Isaac Shone, C. and M.E., F.G.S., Mayor of Wrexham, and Mineral Surveyor to the Duke of Westminster.

The titles to the properties have been examined, and approval on behalf of the company by eminent English and American Counsel, and the Company's London Solicitor has also visited the property.

The control of the management is in English hands.

Estimated annual earnings of the Company £140,490, or more than seven times the amount required for the interest and sinking fund.

The fine climate, flourishing industry, large mineral and agricultural resources, and rapidly increasing population of Western America render it an excellent field for safe and lucrative investment, provided that all operations are strictly controlled by English Companies formed on a sound basis.

EXTRACT FROM THE GOVERNOR'S MESSAGE TO THE LEGISLATIVE ASSEMBLY OF UTAH, 1878:

"Already attention is being directed to the vast coal fields of the San Pete County, where are to be found immense veins of bituminous coal of superior quality for cooking and ordinary use."
"The day appears not far distant when these mines will furnish fuel for the smelting of our ores, at a cost probably of one-fourth the money now paid for Pennsylvania coke."

EIGHT PER CENT. RAILWAY DEBENTURES of £100 each at £90.

ISSUE OF £150,000 Eight Per Cent. First Mortgage Railway Debentures, secured on the SAN PETE VALLEY RAILROAD, and in addition on all the Freehold Lands and Property of the CENTRAL PACIFIC COAL AND COKE COMPANY (Limited), in Bonds of £100; issue price, £90 each; redeemable at £100 by annual drawings, commencing in 1882. Interest payable half-yearly in London, by Coupons attached to the Debentures, holders having the right to exchange their Debentures into fully paid-up shares at par.

DIRECTORS.

The Honourable ASHLEY G. PONSONBY, 9, Prince's Gardens, S.W.—CHAIRMAN.
Sir HENRY W. TYLER, Wyvenhoe Hall, near Colchester.
Colonel WILLIAM KEMMIS BETTY, 21, Hyde Park Gate South, S.W.
WILLIAM PETER BOND, Esq., 6, Norfolk-terrace, Walham Green, Fulham, S.W.
CHARLES WILLIAM HECKETHORN, Esq., 67, South Lambeth-road, S.W.

TRUSTEES FOR THE DEBENTURE HOLDERS.

CECIL A. T. OTWAY, Esq., J.P., The Grove, Prestigne, Radnorshire.
The Honourable ASHLEY G. PONSONBY, 9, Prince's Gardens, S.W.
Colonel CHARLES PASLEY, R.E., Ely House, Richmond Hill.

SOLICITORS—Messrs. CARR, FULTON, and CARR, 7, Vigo-street, Regent-street, W.

ENGINEER—LESLIE C. HILL, Assoc. Inst. C.E., F.C.S., Bartholomew House, E.C.

BANKERS—Messrs. RANSOM, BOUVERIE, and CO., 1, Pall Mall East, S.W.; LONDON BANK OF UTAH (Limited), 26, Austinfriars, E.C.

SECRETARY—S. J. SMITHERS, Esq.

OFFICES,—MOORGATE STREET CHAMBERS, LONDON, E.C.

THE DIRECTORS of the CENTRAL PACIFIC COAL AND COKE COMPANY (Limited) are prepared to receive APPLICATIONS for the above DEBENTURES, at the price of £90 for each £100 Bond, payable as follows—viz., £5 on application, £10 on allotment, £25 on the 2nd day of September, £25 on the 3rd day of November, 1879, and £25 on the 7th day of January, 1880. Payment in full may be made on allotment, from which date interest will accrue.

ABRIDGED PROSPECTUS.

These Debenture Bonds will be a first mortgage upon the San Pete Valley Railway, and upon the whole of the company's freehold property, consisting of 6000 acres of coal lands, together with the buildings and plant thereon, valued at £512,030.

The San Pete Valley Railway, from the mines to the junction of the Utah Southern Railroad, will be 30 miles in length, and will connect the coal mines and coke works with the entire railway system of the Western States. This will enable the coal and coke to be supplied to the numerous smelting and other works connected with the vast mining operations of the country.

These works consume large quantities of fuel, which is at present obtained mainly from Pennsylvania, a distance of 2200 miles, at a freight cost of \$23 per ton, or from England at about the same rate; whereas the most important of these works are within 150 miles of the company's property.

The estimated net earnings of the company are as follows:—

From the San Pete Valley Railway £24,850
From the sale of coal and coke 115,640

£140,490

Whereas the interest and sinking fund upon these Debentures will together only require £19,500 per annum.

The capital now to be raised will be applied for the purposes of the railway, and for completing and equipping the same, no promotion money being paid.

Each Debenture will carry ten votes at the general meetings of the company, and £100,000 of the shares have been vested by the vendors in the trustee of the Debenture-holders until the completion of the contract, thus giving the Debenture-holders and their Trustees a majority of the votes.

Prospectuses, forms of application, maps, plans, and reports, and all further information may be obtained from the Secretary at the Office of the Company; and from Messrs. WALTER and CO., No. 17, Charles-street, St. James's, S.W.

Applications for Debentures may be made in writing, in the following words:—
To the Directors of the Central Pacific Coal and Coke Company (Limited),
Moorgate-street Chambers, London, E.C.

GENTLEMEN,—I request that you will allot to me Debentures of the above issue, in respect of which I undertake to pay £90 for every £100 of Debentures; and I hereby agree to accept the same, or any less amount that may be allotted to me, subject to the conditions contained in the prospectus dated 9th July, 1879. I enclose cheque for £ , being £5 on each Debenture applied for.

Name
Address
Profession or description
Signature
Date.....

THE MINERAL RESOURCES OF THE DUTCH EAST INDIES.
No. IV.

The valley of the River Messoie is, for richness in ore, certainly the most important of the whole district. Not alone are rich pits opened in the principal valley and in some of the tributary valleys, but the higher-lying grounds are rich in superficial ore. The average production of this region during the last 35 years has been 5000 peculs. In the lower valley lies No. 57 mine, Tjoeli or Tongshin (now No. 24 Kebinti), which at first worked on the superficial ground of the left bank, and afterwards opened a pit below the old post road to Koba. According to the borings there is still an extent of rich ore ground, for the winning of which the personnel of the mine ought to be much increased, for the ore deposit lies tolerably deep. Next above the Kebinti Mine is No. 14 Tjoehin (now No. 8 Samhin). This was originally a superficial working on the left bank of the valley, the first pit being opened in 1842; the place behind the present chief buildings was, however, badly chosen, and the mine continually got deeper and deeper in debt. The pit sunk in the neighbourhood of the smelting house somewhat altered the position, so that in 1849, with 87 men, the production over two years reached 2015 peculs of tin; but altogether there was a writing off of 10,097 3/4 peculs. These works were undertaken at the junction of the Meloeok with the Messoie, where the ore deposit had entirely collected. At this mine a lower part of the valley has since been brought into work, where the depth of the ore was an inconvenience, but this was in a great measure compensated for by the great richness of the ore. The Samhin Mine has still an extensive workable location.

In the upper part of the Messoie valley, at the boundary of the last mentioned mine, lies the Sambong Mine, which was formerly worked along the sides of the valley, its first pit being opened in 1810. In a short time it was known as one of the most prosperous mines; a rich and regular ore deposit, which was easily worked, and at a small depth, coupled with an ample quantity of water which it had to dispose of, proved very valuable, so that a share in the mine became very valuable, and the annually incoming koolies preferred to be placed in the mine. This mine has now nearly reached the upper boundary of the ore deposit, so that it will soon be working on the lower-lying part of the property, which explorations have shown to be also very rich in ore. Apparently, also, the higher sides of the valley will prove workable, as has already been indicated by the borings near the mouth of the Kajoe-Ara. At present, also, this mine is still working a superficial deposit lying between the two tributary valleys, Sambong and Boengkoan. This ground formerly belonged to No. 36, Kaphin Mine, which for some years gave a magnificent produce. A great many places in the Krobok valley are workable, but in richness it stands, however, far behind the Messoie and Laddi valleys, which lie to the left and right of it, and with which it is joined. The No. 10, Kro Mine, worked superficial deposits on both sides of the valley, and is still in operation, but it was never so profitable as No. 20, Fooshoen (now No. 12 Messoie), which was worked near the edge of the superficial deposit, and in the last 35 years, with an average of 7 1/2 men, yielded 6936-70 peculs, or at the rate of more than 25 peculs per head per year. No. 19, Haphin Mine, in the Laddi river valley, yielded a large production for a considerable time, but afterwards it fell off considerably, so that workpeople began to run away, and the mine was stopped in 1843. No. 18, Soenghing Mine (now No. 11 Laddi), was first worked as a superficial working on the old road to Koba, and then by different pits in the Laddi valley, and gave nearly continuously good products until it cut into the storage dam of No. 12 mine. Operations were afterwards commenced in the lower valley, and the mine is now worked near the former workings of the Haphin Mine, where only little now remains unworked. The Meloeok brook valley contains very little ore. In 1851 the Boengkoan Mine, with 19 men, yielded 1068 peculs. The superficial deposit being exhausted, these workings had to be taken further into the valley, where systematic explorations showed a sufficiently rich ore deposit to exist. The sinking of a pit bore out the anticipations, but owing

to scarcity of water a union with the Dul Mine is much to be desired. The little valley of the Sambong brook is poor in ore; and the Sekendit, Laddi, and Tebat-Tanna brooks contain no tin ore. Near the mouth of the little valley of the Benjoenot brook an ore deposit was discovered by boring, and the Sambong Mine there opened a couple of pits with good results. A superficial deposit is worked in the Kajoe-Ara brook; and the Remia, Alot, and adjacent brook valleys are poor in ore.

Coarse-grained tin ore is found in the Selinta river valley. No. 22, Sinli, or No. 13, Selinta Mine, was first worked on the high side of the valley and along the strand; afterwards as a valley working it proved less profitable. Further exploration has shown that by energetic work this ground might still be made profitable for many years. Moreover, the rich superficial ground is not yet worked out. The little private mine of the Chinese Tjongai that lies to the eastward of the Selinta Mine yielded in 1872 a production of 60 peculs per man. Although in this district the superficial ground contains some ore, yet the most important accumulation is at a depth of 4 or 5 metres, and from a sample of 800 cubic centimetres 450 grammes of ore was washed out, which gives 560 kilogrammes per cubic metre. Whilst the depth of the ore deposit is in some places 1/2 metre, elsewhere very little ore is found. If one takes 400 cubic metres as the work of one man, which is less in proportion to depth, to yield 60 peculs of tin, it follows that the ore must have a richness of 13 kilogrammes per cubic metre to make it pay. In this ground the miners produce very little tin. The Oedang brook valley suffers from want of water. By exploration in 1871 some rich places were found, but since that time they have been worked out. In the River Gemoeroe the tin ore is found less in the valley than as a deposit on the high sides of it. The ground along the left bank and along the left tributary valleys was profitably worked by the Memboroee and Glasse Mines, which latter was suspended in 1873, but explorations have shown that there are still some rich places.

The Nhinbing and Batjan Mine, in the valley of the River Benoeany, was for many years one of the most prosperous mines; it produced in 1850, with 134 men, 4038-78 peculs of tin. By 1870 a great deal of the ground had been worked, but there are still many rich places which have not been touched. Near the Pangkol "kiet" a small mine was worked, but in 1849 a debt of 4117-67 fl. had to be written off. In the upper part of the valley of the Pangkol or Joehin brook large profits were never obtained, and in 1850 a debt of 2452-48 fl. had to be written off. A piece of workable ground found here by boring is now worked by a private adventurer. The Kajoe-Bessi and Kranga brooks contain no ore worth consideration; and the Moentai and Melodin brooks have shown only traces of tin ore. The Krandji and Bebagal brooks contain no tin ore; the valley of the River Lempojong none which has ever given much profit, though there is some ore there; and the Assemklut, Tanam, and Propok brooks contain none. The River Snawar rises in the Jaban hill, and soon unites in the low ground with the Moenjang. Both valleys were found to be oreless, as was expected, for the results of the explorations at Bangka showed that no noteworthy ore deposit was found where no granite existed within 3 or 4 kilometres. This is precisely the case here, no granite being found in the southern part of the district. The whole examination only confirms the total absence of tin ore in this valley.

We now come to the volume just issued, the concluding portion for 1878, which contains a large amount of matter of considerable interest. The first article is by Mr. P. van Dijk, M.E., on the introduction of the Aalborg (Denmark) method of boring, which will only be briefly noticed. Mr. van der Elst, referring to the new method and to the excellent results obtained with it, says that the boring rod is hollow and made out of iron gas piping, the several lengths of which are held together with screw junctions; through this hollow rod a stream of water is taken to the bottom of the pit, and flowing upwards continually carries the debris (boormeel) to the surface. It appears that the Aalborg Company put down near Aalborg in the short space of 62 days a bore hole 400 metres deep. Specimens of the ground passed through are brought up with the water, and by catching these in a trough much useful information

is gained. The entire memoir is well worth reading. This is followed by a report, by Mr. C. de Groot, M.E., on the tin refuse (tra) which is thrown away unutilised at Bangka. Then comes a treatise by Mr. J. A. Huguenin, M.E., on the exploration of the coal deposits at Preanger-Regentschappen, with a description of the nature of the rock met with in the projected railway near Tji-menting, in the Soekaboemi division. Mr. R. Everwijn, M.E., contributes an account of the explorations for copper ore in the Mandhor district, in the western part of Borneo; Mr. P. van Dijk, M.E., describes some improvements in the exploring borer; and Mr. C. de Groot, M.E., furnishes a memoir on the mineral coal of Borneo and its applicability as fuel. There are half-a-dozen supplementary notices, one of which is the record of a chemical examination of the Dutch-Indian coal, which shows that as a steam fuel it is superior to either the Prussian or the Hungarian.

In his report upon the tin refuse Mr. de Groot observes that in recent years the people of Holland have had their eyes upon the method which the Chinese have introduced into Bangka for the smelting out of the tin from the stream tin ore. The opinions of this smelting process were very conflicting (liep zeer uiteen)—there were defenders of both extremes: some declared it very effective, others esteemed it to be incapable of improvement. But the expression of both views was at least rash, because they were not based upon any sufficient investigation. Mr. de Groot's object was to deal with the smelting of the stream tin ore of Bangka, and especially of the tin refuse (tra) which lies unutilised on that island, and with regard to which the question is whether it cannot be further smelted with profit to the State. Since 1843 investigations have been made for ascertaining the value of this unutilised refuse. The produce for tin was found by Prof. G. J. Mulder to vary much at different times, but was at all times considerable. Some analyses made by the said professor in 1854 showed that the average was 19 per cent., although a rough selection from the stuff at his disposal gave but from 1 to 6 per cent. of grain tin, the remainder existing as tin oxide. From an examination of all the communications after 1842 concerning the refuse remaining unutilised at Bangka, exchanged between the Ministry of the Colonies and the Government of the Dutch Indies, and between this Government and the administration of the Bangka, it appeared that the intention of the orders given were not fully understood, and were, therefore, frequently not carried out. The difficulty seems to have arisen from the misunderstanding of the sort of refuse referred to in the instructions, and there was consequently confusion as to whether smelting refuse or dressing refuse was intended, the same technical word being used (in Dutch) for both. The correction of this gave Mr. de Groot much trouble.

When the mine workers (de kongse) find that the refuse is no longer rich enough in tin to pay for further smelting they throw it away; this throwing away, however, is not unlimited, for as soon as the quantity of their refuse is considered to be sufficient it is sold to the highest bidder, and at the sale it is determined whether the buyer shall be entitled wholly or partly to take the smelting house refuse, slags, &c., in addition to the miner's refuse. This refuse is dressed as carefully as possible by the private purchaser in order to be able to smelt out the tin, by which dressing the poorer part is separated, and when this private purchaser (the traemelter) has got all he can by ordinary washing and smelting, he utilises the refuse (traemelter's refuse) in order to bring together the grains of tin as much as possible by treating it in an iron pan with the addition of oil, and melting out any tin contained. Mr. de Groot explains that it is only the traemelter's last rejected refuse which is unutilised and thrown away in Bangka. That the exportation to Holland of Bangka tin refuse from 1843 to 1854 has given rise to repeated mistakes is, Mr. de Groot considers, certain, and there is also not the slightest doubt that the refuse out of which Prof. Mulder obtained 38 to 45 per cent. of tin was not the refuse which is thrown away unutilised at Bangka. Consequently a full enquiry was made to ascertain what refuse really was thrown away, and also whether, if choice were given to mineral coal, the Borneo fuel could be employed, and at what price. It appears from a note that when the mean production of Bangka reaches 80,000 peculs, then there is re-

quired for the production of charcoal at least 50,000 cubic metres of wood, or more than 350,000 trees of from 15 to 20 years old, so that it would be necessary to keep up the supply for every man to plant 90 trees per annum. It is shown, moreover, that altogether the Bangka refuse annually thrown away utilised in the several districts is in Muntok about 2 kojangs; Jeboes, 20; Blinje, 82; Soengeiliat, 31; Merawang, 68; Pangkalpinang, 38; Koba, 7; To-boali, 19; and Soengeiselan, 27; making together about 294 kojangs, or 8822 peculs. It is also found that each year less tin is lost in the finally rejected refuse, and in the years which have elapsed since Mr. de Groot's treatise was written it may be assumed that this improvement has been going on.

Assuming the yearly production of Bangka to be 80,000 peculs—that is, 10,000,000 Amsterdam pounds—of tin, then according to the ascertained results the smelting house refuse would be annually 1,012,732 Amsterdam pounds, or nearly 8822 peculs, which would contain about 15½ per cent. of tin—that is, 173,272 Amsterdam pounds, or 1386 peculs of tin. By subsequent working the whole of this could not be recovered within 5 per cent., so that on an annual production of 80,000 peculs the question is whether the recovery of 1316867 peculs, or 1·646 per cent., would be remunerative. Mr. de Groot then discusses the application of Dr. Bleckrode's method of treating the "tra" with cold blast and dry steam, and a full debtor and creditor account is given, which shows that the 1316867 peculs of tin, at 50 fl. per pecul, would be worth 65,843·35 fl., whilst the cost of extracting it would be 66,968·70 fl., showing a loss of 1125·35 fl. But it seems that this estimated amount of loss is very much lower than it would really be, as the prices and quantities of reagents used are taken too low. Thus, soda is charged 12 cents. (about 2½d.) per Amsterdam pound, whilst the true price at Batavia, there being no salt obtainable in the Dutch Indies, is about 30 cents. (6d.) wholesale. Taking the commercial price of soda the loss would amount to 50,000 fl. instead of 1125 fl. Again, it is reckoned one part soda to four parts refuse, but it seems that in practice the consumption is nearer three parts soda to four parts refuse. And, further, the estimate of 50 fl. for tin in Holland is only justified by the extraordinary high prices ruling in the years preceding 1855. Even with these favourable figures the question turns upon the consideration whether it is possible to deliver raw soda in sufficient quantity and at a corresponding or at least a lower price in Bangka than that at which salt is obtainable in Holland? In order to come to a satisfactory solution of the question just put, the Government of the Dutch Indies were in 1855 taking steps which it was hoped would lead to the establishment of the soda manufacture either in Bangka itself or in the neighbouring islands.

THE MINES OF CARDIGANSHIRE.

THE BRYN GLAS SILVER-LEAD MINE.

Writing more than 200 years ago Sir John Pettus, the author of *Fodinae Ragales*, and himself a member of a company for working mineral properties in Wales, expressed his opinion that the neglect of the mines of Cardiganshire was to the nation a loss of 1,000,000l. a year. In the long interval which has elapsed since Sir John Pettus placed this opinion on record the reproach conveyed in the statement has been, to a very considerable extent, removed, inasmuch as at different periods large numbers of mining properties have been opened up, and developed in this rich metalliferous county, many of which returned handsome profits to the adventurers, whilst in some cases enormous fortunes rewarded the enterprise of the fortunate proprietors. But notwithstanding the mining activity which has prevailed in the district for many years past, there can be no doubt there is still a very widely extended and practically inexhaustible field there for the operations of the miner. As a silver-lead and lead mining district, it is admitted that Cardiganshire is not equalled by any other in Great Britain, and the fact that three or four years ago no less than one-fourth of the entire silver raised in the United Kingdom came from the mines of that county, is about the best evidence which can be adduced to satisfy practical men that the mining properties there are eminently worthy the attention of capitalists.

Without referring at length to the geological features or peculiarities of the district, it may be mentioned that the county of Cardigan, as well as the neighbouring county of Montgomery on the north, are particularly noted for their deposits of lead and blende, the veins of which, like those of Cornwall generally, are found to have a direction within a few points of east and west. They are generally well defined, and in many instances are large and highly metalliferous; in some cases they crop up to the surface and are plainly visible to the most casual observer, and instances have occurred where considerable quantities of lead have been excavated from only a few feet below the grass. Speaking generally the Cardiganshire mines are embedded in the Cambrian slate, the extraordinary thickness of which is well-known to geologists and mining men, and judging from the results obtained by the old workers for metal in the locality as well as by more recent adventurers, there can be no reasonable doubt in the minds of practical and scientific men that this range of Cambrian rocks contains incalculable wealth. But it must be borne in mind that down to a comparatively recent period Cardiganshire has been really an isolated and remote district, to which capitalists or visitors could not readily find access. The opening of the railway to Aberystwith must tend to give a great impetus to the mining industry of the county generally, and indeed its influence in that direction is already apparent in the praiseworthy attempts which have been made during the past few years to work the lead and blende deposits of Cardiganshire. The result of these endeavours has been, and continues to be, watched with the greatest interest by those who appreciate the vast importance of properly developing these great sources of our national wealth. Those who are most intimately acquainted with the district, and with the stores of latent mineral wealth there to be found, are justified in their belief that with the judicious employment of capital and the application of the most recent scientific knowledge and the improved machinery of the present day, Cardiganshire will become one of the richest counties in the Principality.

Not the least important or praiseworthy of the numerous adventures which have in recent years been made to develop the metalliferous riches of Cardiganshire is the project now before the public for working on a comprehensive scale, and in a thoroughly miner-like manner, the well known and very valuable silver-lead mining property of Bryn Glas, situated near Ponterwyd, in the centre of the richest lead district of the county—a locality, it may be mentioned (in passing), whence Sir Hugh Middleton, many years ago, drew large supplies of that enormous wealth which enabled him to bestow upon the northern districts of London the great blessing of an abundant supply of pure water. Formerly Bryn Glas was worked—as has been the case with many rich mineral properties in different parts of the kingdom—by a few tradesmen and farmers living in the neighbourhood. These adventurers, with the crude appliances at their command, were only able to take out the richest ores, which required but little dressing, and, of course, were unable to carry the mine to any depth, owing to the want of adequate machinery. But it may be mentioned, as significant of the wealth of Bryn Glas, that according to Pike's Records at the shallow depth of only 22 fms. from surface it has already produced 3114 tons of ore, which has realised as high as 20s. per ton, and it is an established fact that no mine hitherto discovered in Cardiganshire has produced such large quantities of silver-lead at such a short distance from surface.

The sett is located in the centre of the richest group of mines ever discovered in Cardiganshire, and the grants of the property are very extensive. The facilities for the carriage of material to and from the mine are great. Practical miners who are thoroughly acquainted with the locality entertain a high opinion of the future of this promising property, and amongst others who take a favourable view may be mentioned the names of Capt. A. Francis, Capt. Peter Garland, Capt. Harvey (of Bryn Glas), Capt. Hancock (late of the Old Treburgett), Capt. Kitto (formerly of the Great Laxey), Capt. Owen, and Capt. John Williams, who was the first to introduce the Great Van Mine to the notice of the public—all of them men of practical experience, whose opinions carry weight. In a private

Annexed we beg to hand you the particulars of an issue of 10,000l. of Debentures in the RUBY AND DUNDERBERG CONSOLIDATED MINING COMPANY (LIMITED), the whole having been secured by us for distribution. Applications may be forwarded to the company's offices or the Consolidated Bank on or before the 31st instant. Large profits were realised by the parties who held adverse possession of the mines, and it is the opinion of the first authorities in the district that the company's property is second to none in Eureka. We recommend these Debentures as an investment of no ordinary character, while the option of conversion, together with the Bonus Shares, add materially to the value of the security. Forms of application to be had at the above address.

We are, yours truly,
BATTERS AND CO.
HENRY GUTIERREZ.

Ruby and Dunderberg Consolidated Mining Company

(LIMITED).

CAPITAL £253,000, IN 25,300 SHARES OF £10 EACH.

All of which are fully paid.

DIRECTORS.

W. A. MALCOLM, Esq. (CHAIRMAN), 5, Crosby-square, E.C.
Major-Gen. J. D'OYLY, 6, Charles-street, Berkeley-square, W.
J. M. HYDE, Esq., 77, Cambridge Gardens West, Kensington-park West, W.
L. MALCOLM, Esq., 22, St. Mary Axe, E.C.

BANKERS—CONSOLIDATED BANK, Threadneedle-street, E.C.

SECRETARY—J. F. HAMILTON, Esq.

OFFICES—5, CROSBY SQUARE, E.C.

SOLICITORS—Messrs. MARKBY, STEWART, and Co., Coleman-street, E.C.

Issue of £10,000 Debentures, forming part of £25,000, bearing interest at 10 per cent. per annum, payable half-yearly:—
On the 1st January and 1st July in each year.

The principal of the debentures is repayable in six years or sooner, at the option of the company, with the option at any time during the next three years of converting the same into ordinary shares of the company at par, as the holder may determine. The debentures will be issued in amounts of £50, £100, £500, £1000, as may be desired by the investor.

No debenture will be issued for less than £50. The debentures constitute a first charge on the entire property of the company, which comprises the following mines, viz.:—The Dunderberg, Atlas, Pleiades, Jinksville, Home Ticket, Valentine, Lord Byron, El Dorado, Bullwhacker, Tecoma, and Montrose, together with smelting works of an extensive character, and machinery, plant, &c., and they will be secured by a mortgage vesting such property in trustees on behalf of the debenture holders.

As the mines are already extensively developed, the money now raised is for the purpose of further extending the company's operations.

Captain Rickard, of the Richmond Mine, made a full inspection of the company's property on the 2nd June last; the particulars of this inspection can be seen at the offices of the company, it is of a highly satisfactory character.

Mr. W. A. Malcolm (one of the directors of the company), together with Mr. Longmaid, are now at the property, and advices have been received from Mr. Longmaid to the following effect, viz.:—

That the furnaces are of full value and very good, and that they are capable of smelting 60 or 70 tons a day.
That the company is in quiet possession of its mines, and that the titles are good and strictly satisfactory.

That he fully endorses Capt. Rickard's report. That operations have been commenced, and that he accepts the position of manager.

Mr. Longmaid is a gentleman of authority and experience in the mining and smelting of the district.

He went out from this country to advise as to the future of the company's operations, and to accept the management if he was thoroughly satisfied of the value and permanence of the property.

His acceptance, therefore, of the appointment of manager demonstrates his opinion.

The mines are contiguous to the Richmond and Eureka, the latter of which has been in active operation for about ten years, and last year divided £360,000 amongst its fortunate shareholders.

The security now offered would appear to be of the most ample and satisfactory character, securing investors from risk, and presenting an additional speculative value in the option which is given of converting the debentures into ordinary shares at par during the next three years. It is not improbable that these shares may rise to a high premium.

To each subscriber is offered a bonus of fully paid shares equal in amount to his debenture subscription, thus for a £100 Debenture Bond there will be given to the subscriber £100 in fully paid shares, and he will moreover be entitled at his option to convert his £100 bond into shares of the value of £100 at any time during the next three years.

All cheques to be paid to the credit of the Ruby and Dunderberg Company (Limited) at the Consolidated Bank, whose receipt will be exchanged for the bonds and shares.

The subscribers are—J. Taylor, Goole, 1500; H. F. Ward, Goole, 300; T. Ramsey, Goole, 150; J. Leed, Goole, 400; J. Waterland, Goole, 40; T. Taylor, Patterdale, Westmoreland, 200; J. Taylor, Liverpool, 100; J. Moss, Goole, 100.

ANGLO-AMERICAN SEED CRUSHING COMPANY (Limited).—Capital 15,000l., in shares of 10l. The manufacture and sale of linseed and other cake and oil, and the doing of all such other things as are conducive to the attainment of the above objects. The subscribers are—B. Pickering, Sutton, Yorks, 300; T. Goodall, Hull, 100; E. Shaw, Gainsborough, 1; J. Johnson, Hull, 1; E. J. Johnson, Hull, 1; J. Westoby, Hull, 1; M. Bowley, Hull, 1.

SUNDERLAND INCORPORATED CHAMBER OF COMMERCE.—Every member undertakes to contribute to the assets in case of liquidation during the time and within one year after he is a member a sum not exceeding 2l. The promotion of trade, commerce, and shipping interests of the town and port. The subscribers are—J. Kayl, Sunderland, shipowner; W. Nicholson, Sunderland, shipowner; C. H. Reed, Sunderland, manufacturer; A. Harkness, Sunderland, iron and steel merchant; W. Grimshaw, Sunderland, manufacturer; C. J. Riches, Sunderland, shipbroker; S. Richardson, Sunderland, corn miller.

OXLEY AND COMPANY (Limited).—Capital 5000l., in shares of 10l. To carry on at Frome, Somerset, the business of a brewer's engineer, vatmaker, and cooper-smith. The subscribers are—W. Oxley, Ipswich, 6; Eliza Oxley, Bristol, 2; Alice C. Evans, Bristol, 2; Rose M. Oxley, Bristol, 2; J. Lewis, Bristol, 2; J. Dale, Bristol, 2; J. A. Oxley, Newport, 1.

THE EDISON TELEPHONE COMPANY OF LONDON (Limited).—Capital 200,000l., in shares of 100l. To adopt and carry into effect an agreement made with T. A. Edison, by which letters patent, rights, and monopoly are acquired for the company to manufacture, sell, and let apparatus for the application of the said inventions. The subscribers are—Right Hon. E. P. Bouverie, 44, Wilton-crescent, 10; S. R. Scott, 75, Old Broad-street, 5; W. Campbell, 18, Old Broad-street, 5; John Lubbock, 15, Lombard-street, 10; G. Richardson, 3, Lombard-court, 5; A. Howell, 30, Eastcheap, 5; G. E. Gouraud, 6, Lombard-street, 10.

BANK OF AFRICA (Limited).—Capital 1,000,000l., in shares of 25l. To carry on wherever expedient, and particularly in South Africa, the business of banking in all its branches, and to acquire from the Oriental Bank Corporation its properties, fixtures, assets, &c., in South Africa, and to take up and carry on the business heretofore carried on by that bank. The subscribers are—D. P. Blaine, 2, Suffolk-lane, E., 200; W. S. Steel, 6, East India-avenue, 200; Herman Gwinner, 113, Cannon-street, 100; C. E. Atkinson, 1, Guildhall Chambers, 100; A. Barsdorf, Wool Exchange, E.C., 200; E. Escombe, 5, West-street, E.C., 100; T. J. Plewman, 3, Leyham-gardens, S.W., 200.

THE SHEFFIELD BRICK COMPANY (Limited).—Capital 25,000l., in shares of 10l. The acquiring by purchase the business carried on by the Sheffield Patent Brick Company (Limited), now in liquidation, and to continue such business. The digging, opening, working, and raising beds of coal, lime, and other stones, clay, and earth. The subscribers (who take one share each) are—J. Aizlewood, Sheffield; A. Sellers, Sheffield; J. B. Wostinholm, Sheffield; J. Wilson, Sheffield; T. H. Jenkinson, Sheffield; W. Storm, Sheffield; J. Yeardley, Sheffield.

PANAMA CANAL.—The reception which Mr. F. de Lesseps is receiving at the various cities and towns of France which he is visiting, for the purpose of explaining the advantages of and securing support for the enterprise, is most encouraging. At Lyons, Bayonne, and elsewhere his reception has been most enthusiastic, and it is stated that he has been invited to Glasgow and New York, and that he will visit the latter city in November. The enterprise is said to be receiving a fair amount of support in this country.

The creditors of the Skerne Ironworks Company are to send in their claims by Sept. 4, and those of the Kithill Tunnel (Limited) by Oct. 1.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

SUMBURGH MINING COMPANY (Limited).—Capital 60,000l., in shares of 10l.—3500 preferred and 2500 deferred. To carry on the business of mining in Scotland. To purchase, take over, and continue the working of copper and other minerals in the parish of Sandwich, Shetland, on the estate of Mr. J. Bruce, held under lease by Mr. J. Walker, or any interest therein, according to an agreement by which the said J. Walker shall and will thenceforth stand possessed of the said leasehold properties and his rights and interests therein as trustee for the company, and will convey all the property to the said company in accordance with the law of Scotland, subject to the terms and conditions of lease, for the consideration of 2500l. in deferred shares and 25,000l. in cash. To lease, sell, or exchange the mines, mineral ground, lands, property, and effects of the company. To work and develop any mines or mineral ground belonging to the company. The subscribers are—G. Hamilton, Ardenee, sheriff's clerk, 100; A. Walker, Aberdeen, merchant, 100; H. C. Smith, 75, Gresham-street, merchant, 50; J. C. Mackinlay, 27, Walbrook, merchant, 10; G. Davis, Hendon, solicitor, 10; J. Tomlin, East Moulsey, gentleman, 10; W. B. Smith, 8, Old Jewry, manufacturer, 10. Until the general meeting, occurring 12 months after the incorporation of the company, the following shareholders shall be the directors:—Sir Thomas Dakin, G. Hopkins, J. Dale, George Hamilton, and A. Walker, with power to appoint other directors. Remuneration to be determined by the company in general meeting.

SALCOMBE MUTUAL SHIPPING INSURANCE ASSOCIATION (Limited).—Every member is liable to subscribe any sum up to 5l. to the assets of the association in case of liquidation of same during the time he is a member, or within one year afterwards. The mutual insurance of ships, or shares of ships, of the members, together with cargoes. The subscribers are—R. Hurrell, Kingsbridge, Devon; R. H. Sladen, Salcombe; W. Dale, Kingsbridge; E. Quick, Salcombe; J. H. Hill, Salcombe; W. W. Steer, Salcombe; H. Grant, Kingsbridge.

BARTHAM'S COUNTY BRIDGE STEAM BONE MILLS AND CHEMICAL MANURE COMPANY (Limited).—Capital 5000l., in shares of 10l. To purchase and carry on the business of the County Bridge Steam Bone Mills and Chemical Manure Works, at Ash, Surrey, which belonged to the late W. Bartram. The subscribers (who take 10 shares each) are—W. A. Campbell, Aldershot; W. T. Coleman, Farnham; J. Stapley, Farnham; F. R. Turvill, Aldershot; R. Simmond, Aldershot; S. Andrews, Farnham; H. Potter, Farnham.

THE GOOLE AND HULL STEAM PACKET COMPANY (Limited).—Capital 10,000l., in shares of 1l. For the conveyance of passengers, goods, &c., in steamboats between such places as the company may

Meetings of Public Companies.

ANTIOQUIA (FRONTINO) COMPANY.

The ordinary general meeting of the shareholders was held at the City Terminus Hotel, Cannon-street, on Thursday, under the presidency of Mr. THOMAS EYRE FOAKES.

The notice convening the meeting and the other documents were taken as read.

The CHAIRMAN: I should like to make a few observations in reference to what Mr. White says in his report of Jan. 3, and with reference to the prospects these mines have if only they are properly developed. After that has been done, Mr. Robert White's brother, Mr. Franklin White, is here, and as he left the mines only about April 29, he will be able to give you information from a personal point of view, which I am sure will be gratifying to you to hear. I will not trouble you at any very great length, because I have sent round the report of Mr. White in order that you may have an opportunity of reading what he says as to how this mine ought to be dealt with, and what money we require in order to deal with it. As I have said, the whole of our interest now centres in the new shaft, which is the mainstay of the future mine. As the shaft now stands it is not a mine, inasmuch as the sound ground between us and the old workings measures only 650 square fathoms. But every fathom that that shaft deepens below the 13 gives us 180 fathoms of known profitable ground ahead of us. At 10 fathoms more, or say at 23 fathoms, we should have 1800 fathoms of back ahead of us. It is a question whether the shaft shall be sunk and the mine made, but no doubt hangs round the results if this be done. On referring to the produce account you will find that the present workings from the shaft produce 9 and 10 tons per fathom, and as we go westward and enter ground where the lode was far more powerful at the adit level (about this there is no doubt, as we have it before our eyes) the produce per square fathom ought to increase very considerably. If we set down the yield per ton at 1 oz. we shall be under the mark, as it is less than our present average obtained from a part by no means promising, and from mineral which, owing to the limited amount of stopes when compared with regard to the ores found in this shaft, we have had some specimens which Mr. White has brought, and which are now on the table. They are all from the shaft. One of them has been assayed, and has given 4½ oz. pure gold, and 5 oz. silver. Putting both together they would make about 10 ozs. to the ton, and that will sell for 3½ an ounce. You must remember that that is only an assay, and that we could not get that amount from the gold, but Mr. White will tell you that he thinks there is very little doubt but what we shall get 3 ozs., worth—as I have said—3½ each. If that be so you must see what immense value that gives to this property, because the whole of the back will be developed by the shaft going down. By sinking this shaft, as Mr. White proposes to do, we shall open up the whole of the back, and when we get down to the 23 fathoms, of which 17 fms. 4 ft. are completed, we shall have 1800 fms. of back, each of which he says will produce from 9 to 10 tons per fathom. I am sure I need not point out to you that with such a prospect as this before us, certainly if any mine ought to pay this ought to pay. He then shows us why we are only making small profits. "We are pumping by hand from 14 fms. in depth, hauling as best we can with hand windlasses, and above all we are leaving a floor and arches under the old adit level, which work requires a heavy extra expenditure in the driving of ends and drifts. The arches are the more necessary as we are still too near the shaft to dispense with them. Our total cost is now \$125 10th per ton, and this would be largely reduced if the works were extended and properly organised. I will point out how. The positions, the workings, and general character of the mine require that a considerable amount of vigilance be exercised over the workmen." He goes on to say we have now a six-head stamp mill only and we ought to have a 12-head. The very same number of mine agents and workmen will suffice for the 12-head that does for the six-head, therefore we really are at a very large extra cost by reason of the small profits we get owing to this insufficiency of working capital. "You may count upon 27 per ton, being (perhaps it is too high) the cost to which we can reduce our total mine cost if we develop the works as they should be. Suppose the pumping and hauling machinery, 12-head stamps and arrastre to be put up, we can then treat easily—for I take the lowest figures—250 tons per month, and we can easily obtain it. Frontino gives proofs in all directions that mineral of 1 oz. per ton is generally obtained. The mineral met with in the present workings fairly averages 1½ oz. per ton if it were to be obtained clean. The lode not only promises but shows improvement in depth. Let us take, then, 1 oz. as the probable produce, and 27 per ton as total mine cost. You will find we ought to obtain at the above rates \$5070 per month in produce, at an expense of \$1750, which shows a profit of 6374½ per annum, or (say) 20 per cent. on the total capital of the company. Neither have we taken into account the probable increased yield of the mineral when we have proper means for treating the sands, muds, and tailings. The present reserves of sands are rich and valuable, but we have yet to see what they will really produce." In one of the Frontino Mines (the Silencio) we have been treating ores successfully which gave only 4 dwts. to the ton. That is not a large amount, but if you come to reckon that with the other adjuncts of course it adds greatly to the value of your property. He (the Chairman) then by means of a plan showed the respective positions of the Escobar and Carme mines, and in doing so he said that the manager was only out 1 ft. in his calculations. That showed how accurate they were in ascertaining that the two lodes went down in the way they did; and further, that these lodes would meet at a certain point. Now, if they formed a junction, as there was every probability they would, then there was every prospect of their having an immense lode and a very rich one. With-out that even, they saw what Mr. White said about the other portions of the property, for what had just been said had no reference to the Escobar, estimated to contain 1800 fms. of back, with 9 or 10 tons of mineral per fathom, estimated to give a low average from 1 to 1½ oz. per ton. He told them "to reduce the matter to its essence we require—and I feel justified in asking you to provide capital for carrying out the following works and plant:—The erection of pumping and hauling; the erection of the rock-drill and driving of the new adit; the erection of 12 head stamps and arrastres; the re-flooring of the adit level and other works connected with the drainage of the old shaft workings." After speaking of the difficulties with the water, as far as they could judge, if they carried out these recommendations there was a large and profitable piece of ground to work, so much so that in the opinion of Mr. White it would pay them their full capital back in two or three years, and it was to be remembered that this company's capital was only one-third of that of the sister company. He (the Chairman) then called attention to the value of the Escobar part of the set, which he highly extolled, and condemned the pottering policy which had so long been pursued, urging the shareholders to supply the capital that was now needed, and pointing out the inadvisability of relying upon other people for it. Mr. White said they ought to have 4000—some to be in reserve—but he (the Chairman) thought that if 3500 were put in, it would be sufficient. Even all of this would not be required at once, but might be paid (say) in instalments, spread over one year. Whilst they were developing one part of the mine profit would be accruing from the other, so that it might not be necessary to ask for more than 2000 of the 3500. Let them not separate without determining to work this mine in an efficient and proper way. The produce of the mine for the year ending April 30, 1879, was 4310l. 19s. 11d., and the expenditure 4789l.—only a loss of 438l., even with the present poor appliances.

Mr. FRANKLIN WHITE (brother of the manager) said the project which was put before the shareholders was only on the Carme Mine, and they chiefly based their hopes upon the workings there. To extend the workings as the manager and he desired, they would have to engage a larger number of workmen than at present on the spot. At present the work was merely carried on upon a month principle for want of capital. His brother had to ask himself—"How much gold shall I be able to get out this month?" And supposing he were able to rely on \$1500 then he would say—"I can spend that, but I must do nothing more," because the bankers were unwilling to advance more than the gold was worth. Now, if any little accident happened to the pumps they could not get the gold out, and they could not carry on the extra workings so actively as they could wish. He did not know how much was spent on surface works last year, but the sum was considerable, because the engine which they hoped they had been doing work in the cross cut and preparing for the engine which they hoped to receive. They had been also improving the floor of the adit level, and little by little they had been driving the cross-cut. A good deal of work had been done on the other lodes. A mill had been put up which, he believed, would be ready by Aug. 1. One portion of ground (this was indicated on the plan, and in truth the speakers' remarks were illustrated in the same way, so that it is difficult to make them so clear as could be wished), gave an average of 1 oz. per ton, and there was no reason to suppose that his brother's estimate would not be quite equal to his prediction. The adit level would require to be improved, because there was an insufficiency of room, but that, as already stated, was in process of being done. The little shaft, with a little extra machinery, would yield from 1500 to 2000 a month profit, irrespective of other portions of the mine. That improvement applied to the six-head mill, and they had plenty of water from putting up another 12-head mill. They could get mineral by driving westward but not at present, because there was danger ahead of them in the form of a piece of ground above full of water. All this might at any moment come down into their shaft. The real question at the present moment was "Have you sufficient confidence in the mine to give the money to do the work quickly and effectively, or shall we go on from hand to mouth?" He was going on for so long a time past? The Chairman had given reasons why it did not pay to go on in the old style, and he (the speaker) hoped that the new measures would be raised. Hoping for the increased capital they had taken all the necessary measures for efficiently carrying on the works on a large scale. He must remind the meeting that the timber in the mine was deteriorating in the same as if they were working at full pressure, and they were continually paying money to repair it. The new shaft was down to within 2 or 3 ft. of the level it was going to do. The shaft when begun did not carry mineral worth 5 dwts. to the ton; but as depth was attained so it improved. In the same way they hoped to find the mineral in the adit improved beyond what they did in the main level. They knew what the old workers got from there, and from enquiries he had made he had come to the conclusion that they left off partly because of disagreements amongst themselves, but chiefly because of the water, which drowned them out. He knew what worked at the spot himself, and did not now speak without a knowledge of its capabilities. They had a hope that in the old stopes they would find some mineral left behind, and some had been secured already, which had almost the appearance of barren rock, but which when assayed yielded a very rich return. In other places (all indicated on the plan) they had good mineral. There were three levels on the Escobar lode, which would give a good amount of back, and they were going to try to get something from the Breoca lode, from which they knew there was better mineral ahead. Generally speaking, even with the present miserably inadequate appliances, they had very nearly paid expenses. At an instance of the expense to which they were put, they were now spending \$140 or \$150 a month in pumping by hand-labour, whereas the pumping machinery would do the work for some \$40. Mr. White went on to show the repeated stoppages they had had from want of working capital, and to urge some further cogent reasons why it should be forthcoming at once.

After an unimportant discussion, in which Mr. Jehu Hitchins and others took part, a SHAREHOLDER said the reports of Mr. R. B. White were too sanguine. The CHAIRMAN defended Mr. White, and pointed out how well all his statements had been borne out.

On the motion of the CHAIRMAN, seconded by the Hon. F. C. DRUMMOND, the report and accounts were unanimously adopted.

Mr. Foakes and Mr. Baxter were re-elected directors on the motion of Mr. HOLLINGSWORTH, seconded by Mr. RHODES.

Messrs. Waddell and Co. were re-elected auditors.

The meeting was then made special, when, on the motion of the CHAIRMAN, seconded by Mr. BAXTER, the following resolutions were passed:—

"That the capital of the company be increased by the issue of 5000 shares of the company of 1l. each."

"That in the event of the resolution authorising the issue of the additional 5000 shares being confirmed at a subsequent general meeting of the company, and of the shares in question not being subscribed for by the existing shareholders, such shares be offered to those shareholders who may have taken, or may take, the company's debentures, in the proportion of one fully paid up share for every 1l. of such debentures."

Mr. WHITE then gave some account of the Frontino and Bolivia Mining Company's property, which was very encouraging, but which would hardly be intelligible to our readers in the absence of the plan with which he illustrated his remarks.

A vote of thanks to the Chairman and the Messrs. White brought the meeting to a close.

D'ERESBY MOUNTAIN MINING COMPANY.

The ordinary general meeting of the shareholders was held at the office, Gracechurch-street, yesterday.

Mr. J. Y. WATSON in the chair.

Mr. C. B. PARRY (the secretary) read the notice calling the meeting.

The directors' report was as follows:—

The accounts in the hands of the auditor, and which will be presented to the meeting, show assets over liabilities of 2408l. 8s. 7d. The shareholders are aware that after the discovery of the Gorse lode, at the No. 4 level, the great point of interest in the mine was to get under it and prove its value at a deeper level (No. 5), which had its opening in another set, 300 fms. down the valley. The story in the neighbourhood was that, more than a century ago, the old miners, in order to follow down a rich lode from which they were getting 50 to 100 tons of lead per month, erected a small water-wheel underground, that is, in the No. 5 level—and owing to the wide aperture necessary for the wheel, the level with all its timber fell in, crushed the water wheel, and put a stop to all mining operations. In order to prove this it was necessary first to obtain a grant of the Valley set, which was done, and the No. 5 level has been cleared at great expense nearly 300 fms. This operation, which at its commencement the directors hoped might be accomplished in a few weeks, took upwards of 12 months, as the level was found in places to be totally crushed in, and the men in clearing it had frequently to work up to their waists in water, and make an entirely new level of it. A month ago the work was completed and all difficulties overcome, except clearing the "Old Men's Run," where the water-wheel has been found with a rich lode standing all round it. For further particulars on this point the shareholders are referred to the agents' report. While the work of clearing the Valley adit was proceeding two water-wheels, stone breaker, crusher, and all necessary machinery were erected for dressing the ore found at No. 4 stopes. These were ready to commence work at the beginning of the year, but the frost set in and stopped them for two months; and during the month of May there was no water for the wheel. Our machinery, however, has been cleared, and is now in a position to work. We have also made and erected a smaller water-wheel for driving the jiggers and bidders on the washing-floors; two sets of treble jiggers, round and flat bidders, trunks, ties, and, in fact, everything to complete our present requirements for dressing, including a large ore house. We have also made a reservoir, and diverted all available streams of water, causing them to flow into it. At the Gorse shaft we have a 10-horse power engine, with winding drum attached for winding the stuff from No. 5, with suitable arrangements for pumping when it may be required; a pithead or shears over the shaft, and everything to complete our requirements for winding. We have also erected, in conformity with the Explosive Act, a powder magazine. Underground, No. 5. We have commenced clearing No. 5 adit previous to the last meeting, since then we have continued this work without intermission. The level was completely filled with stuff, and for a great part of the distance the roof entirely broken down, so that it necessitated our making a new level, making the work more arduous and expensive, as so much timber was required. Yet in addition to clearing up three shafts we have completed 240 fms., making the level quite secure, and a complete outlet for all water at and above that point.

It will be remembered that the object of making this level was to get at the course of rich lead left by the old men more than a century ago, who worked it from surface down to No. 5, and some distance below, and were stopped by an accident which was caused by a flood which broke into the mine by the water-course they had made to conduct the water to the water-wheel they had underground for pumping from below No. 5, carrying before it debris and breaking down stuffs, the whole falling on the water-wheel and into the sump, filling up the whole concern, and burying all their works, which were seen no more till recently, when we examined the old remains—water-wheel and pump and some portions of the lead left to stand which had been cleared away unworried by their notice, as they had no means of reducing it but by buckets, but with our appliances we got upon it as a grand discovery, as from it we infer that the course of lead left in the bottom of the sump is of far greater magnitude and worth. The water-wheel is rudely constructed, and must be as old as is reported. The whole is made of native oak, 9 ft. diameter by 3 ft. breast. The segments are 3 inches thick, and the crank 1½ in. square iron rudely turned round to form the angle. The pump also is constructed of wood, and, as far as we can judge, the working barrel is on the top, and if this is so the sump cannot be more than 4 fathoms deep, or that is the extreme depth the pump could draw water. We are at present engaged in making a secure level through the rubbish fallen down by the above named accident, which is 14 ft. wide, requiring strong timber and the utmost care. Through this large run we have driven and made secure from 4 to 5 fms. What is yet to be done we cannot say with any amount of certainty, but from appearances we consider we are more than half-way through. On the completion of this driving we shall immediately commence clearing up the sump below, when, from the appearance of the lode left to stand in the bottom of the level, in addition to a large course of ore, which will amply repay us for the outlay and perseverance the work has involved.

GORSE SHAFT.—We have made a new shaft from surface to the No. 5, utilising a small winze between No. 4 and No. 5 by clearing up and enlarging, and have cased and divided it from top to bottom, and made a footway from the No. 4 to the No. 5. On account of our attention having been directed more particularly to the clearing of the No. 5, for reasons already stated, our operations have been comparatively limited. A short time ago we made some little further trial on the Hafna lode at the No. 4 by working the roof of the level and putting up a rise for a short distance. It is a large strong lode, containing good ribs of lead; and as the lode is far from the surface, and the level is at present in a position of intersections with other important lodes—Fuchuslas (the lodes of Nos. 3, 2, and 1 adits), Harker's heading, and Harker's hanging, and eventually the great Gorse lode, and could be extended under some very important old workings which could not be continued on account of the water, and driven as a pioneer level under Fuchuslas section of the mine at a depth of 30 fms. below No. 3, we would strongly recommend the driving of this level in that direction.—No. 3 Adit: The No. 3 adit we have driven from 10 to 11 fms., and have passed through a nice shoot of ore gone down into the bottom of the level. The lode in the end at the present time is rather small, but we have less than 20 fms. to drive to intersect the main east and west lode of a mine, and that many fathoms deeper than the bottom of the mine we would recommend the continuation of this level, not only for the sake of proving and working the lode, but also for making a further communication with Nos. 2 and 3 adits, proving at the same time the value of this lode at a great depth from surface.—Rise from No. 3 to No. 2: We have put up a rise from No. 3 to No. 2, communicating with an old sump in the bottom of the latter. This has well ventilated this part of the mine, and opened out a section of stoping ground which is now being worked, and could we get a fair price would pay very well.

No. 2 Adit: Having ventilated the No. 2, as well as the No. 3, we have commenced driving the former, and Llanrwst, have driven about 6 fms. on the course of the lode. This lode is from 1½ to 2 ft. wide, and has a very kindly appearance, yielding good blende and fine spots of lead, with nice priany spar, and is now very similar to the lode at No. 1 over this point, and we expect to meet shortly the bunch of ore gone down in the bottom of No. 1, which cannot yet be worked on account of the water.—No. 1 Adit: We have driven the No. 1 adit 28 fms., the lode yielding continuously good blende and occasional good bunches of lead. As we are now getting under some extensive old workings at surface from which a great quantity of lead must have been raised, we expect shortly to meet with another good bunch of that ore. As we expect that these old workings will soon be drained by this end, we can easily sink down a shaft from them to this level, thus proving the ground and ventilating the level. Although it may appear to some that our progress has not been so rapid as was at first anticipated, yet a slight consideration will convince any unprejudiced mind that whatever might have been expected all our possibilities and powers have been in active operation, or so much work as we have done could never have been accomplished. The clearing, or making new an adit level for more than 300 fathoms in length can only be looked upon as the work of time. We are glad to say that this is now on the eve of completion, and all well and substantially done. And the present is the beginning of a new era pregnant with brightest hopes of a prosperous future. We feel that we should not be doing justice to those interested in the mine if we did not state fully that our confidence in its success increases with our growing experience and our more intimate knowledge of all the various points in the mine.—JOHN ROBERTS, WM. SANDOE.

The CHAIRMAN said the accounts showed a balance of assets over liabilities of 2196l. 8s. 7d. The clearing of No. 5 adit had been an expensive and tedious affair, but the work was completed about a

month ago, and all the difficulties overcome except the clearing of the old men's run; and if they found the sump as good as the old miners left it (as they hoped to do) they would have one of the best mines in Wales. Mr. PARRY had recently visited the mine, and had informed him that where the wheel was it was 14 ft. wide, with lead in the sides of the lode left standing and there would be no difficulty in breaking 3 tons per day if it could be taken away. But the work had to be retimbered, and it was necessary to proceed very cautiously.

Mr. PARRY said that in the No. 5 level, when he was there a few days ago, the work was 13 or 14 ft. wide, and only the sides had been left standing, but they were exceedingly rich in lead. As soon as they had cleared the level they would proceed to clear the old men's sump, which was only about 4 fms. below the level, and there they expected to get into solid ground. As far as the experience of the company had gone up to the present time, all the reports of the old men had been thoroughly verified by what had been discovered, and he had not the least doubt that the reports concerning the sump would be true also. Certainly at the present time the prospects of the company were excellent.

The CHAIRMAN said he might mention, as a curious fact, that in No. 4 he and many of the shareholders had stood upon an extraordinarily rich floor of stuff, but that had since sunk down about 10 ft., and was, in fact, the arch of the level beneath. He had often been considered too sanguine in regard to the mine, but he was now more sanguine than ever, and before long D'eresby Mountain would be a great mine, and the whole district alive again. He then formally moved the adoption of the directors' report, the accounts, and the report of the agents.

Mr. WEBB seconded the resolution, which was put and carried.

Mr. J. Y. Watson was re-elected a director.

The auditor, Mr. Edward Ashmead, was re-appointed, and the meeting broke up.

[For remainder of Meetings, see to day's Supplement.]

FOREIGN MINES.

RICHMOND CONSOLIDATED.—Telegram from the mine at Eureka, Nevada: Week's run, \$85,000, from 1145 tons of ore. Doré bars from refinery, \$45,000.

—R. Rickard, July 13: Since my last there is nothing new to report from the mine. The 200 fm. level cross cut has been drifted 29 ft.; the ground in the present end is harder, and not looking so favourable for ore as it was. The 400, on quartzite, has been advanced 24 ft.; the ground in present end is favourable for drifting. The 400 south cross-cut has been drifted 24 ft., without any change in the ground to notice. The 500 north cross-cut has been advanced 10 ft.; the ground in present end is harder, and consequently slow progress is being made. The 600 west drift has been advanced 12 ft.; the ground has been very hard in the present end—it is easier, and is looking more favourable for ore. The 900 south cross-cut has been drifted 10 ft. without any change in the ground. The No. 11 chamber is still turning out some ore of fair quality, but is not looking quite so well as it was. The No. 12 chamber is holding its own, with considerable ore still in view. The furnaces are doing good work; the average smelting for last week was 77 tons per diem each. The machinery is all in good working order.

DON PEDRO.—Capt. Vivian, July 10: Annual Meeting: Thanks for all documents relating to this, which came to hand in due course. Your remarks under this heading have my best attention, and I hope soon to be able to prove by results what I have stated as regards the good opinion of the lodes at and near the bottom of the mine. You will have seen by previous communications that in consequence of meeting with a choke in No. 2 incline shaft we have been prevented from getting down to work the rich ore ground as early as anticipated; however, I may mention that excellent progress has been made in getting through the choke referred to, and a good substantial and strong job has been made of it. We have cleared the choke and secured the shaft 54 ft. on the line of dip, and as far as yet can be seen the shaft is still full further down, but I am inclined to think of no great extent. As soon as we are in a position to work the stopes in No. 5 old shoot, below the 40, I will advise you at once by cable. In the meantime, you may rest assured that I am quite as anxious to accomplish this as anyone connected with the company, and every exertion is being made for the speedy development of the above-named important point. You mention that the working plan shows the stoping ground below the 40 to be very extensive. My only desire is to have 12 months to work on it without interruption, as then would be seen by actual results what the mine is capable of producing in depth, and thus would clearly prove that I have been perfectly correct in my statements. The heavy repairs to the 60-ft. wheel are nearly completed, and the wheel will, probably, be put to work about the 14th inst.; there will still be a few small jobs to do, which will be accomplished only when it is necessary to stop to change buckets, look to the valves, &c.

The following is the Mine Captain's letter, July 10: General Remarks: The ore has been derived from Bryant's stopes, and continues to rule of low quality, being highly charged with low-class ore in crossing some old levels and inclines, &c., which are badly crushed and choked with debris. The lode is of larger size and better appearance than when last advised, but the quality has not improved.—Changes in No. 2 Incline Shaft: This has been cleared and secured with strong timber for 14 fms. on the line of dip; shaft below still full. Tramroad in same has been laid down the whole distance, and everything made complete for drawing. We have a strong force employed here day and night, so as to complete the job as soon as possible, as working the bottom of the mine depends entirely on this shaft being completed. In the new level fair progress is being made. Adit level, several sets renewed.—Symon's shaft: All divisions put in from below Harry's cross-cut to surface, and shaft repaired from Alice's level to adit level. A pillow of timber built in entrance of level from shaft to Barnden stopes. The repairs to the 60-ft. wheel are now in hand.—Drainage: The further repairs of the 60-ft. wheel and other machinery is advancing fairly. The water in the mine has risen much faster on this stopage than it did on the last, the ground being still well saturated, and not absorbing so much of the water as formerly.—Machinery: Three new stands put in the adit level to carry the horizontal rods in same.—Rego's: Opening up and extending lower rego to endeavour to increase the water. So far the water continues to increase a little, and will we hope augment more yet.

ANTIOQUIA (Frontino).—The directors have advised under date June 8, accompanied by a remittance of gold valued at 302½, the produce of the mine and of the sales of the month of May for the month of May. The statement of the profit and loss for the month of May shows a loss of 18½. In addition to the monthly cost of 320½, 85½ has been spent on capital account. The mines appear to be going on very favourably. Mr. Franklin White will attend the general meeting, to be held on August 7, to give explanations as to the present position and prospects of the mines.

FRONTINO AND BOLIVIA (Gold).—The statement of profit and loss for the month of May shows a profit of 531l. 0s. 4d. In addition to the cost of 187½, 13s. 2d., the sum of 348l. 13s. 4d. was spent on capital account. The reports from the mines continue very satisfactory; the increase in the mine cost and the decrease in the quantity of gold has been caused by the Silencio Mine not yet being in full work, owing to the flooding of the mine on April 10, which was noticed in the last monthly report. The water has been lowered to 83 ft., and the agent reports that the mine is in as good condition as ever, not a timber having started nor the slightest damage done.

BLUE TENT.—D. T. Hughes, July 12: Our water supply from the river slackened off on the 7th, and on the 9th gave out entirely; we are now buying from the Fall Creek Lakes Water Company. The past week we have been able to wash 2000 tons at the South Yuba claim, as we did at the previous blast, for the reason that we have such a quantity of cement lumps tumbled down from the top after the blast; this is quite a detriment to our progress, as there is no alternative but to remove them all. On the failure of our water we stopped the night shift in the Gopher at once, and from this one we shall run the Gopher only to utilise what water we cannot use at the South Yuba.

COPIAPO (Dulciana).—J. H. Vivian, May 31: Since reporting on the 3rd inst. Fletcher's shaft has been completed to the 160 fm. level, aditroad extended to the bottom, and pitch partly cut. I have reset the pit to six men, to complete in a contract for \$20; afterwards these men will resume the driving of the 160 fm. level, north and south of shaft, in a lode 3 ft. wide, and which yields in each end 3 tons of ore per fathom. The winze sinking below the 150, south of shaft, has reached the horizon of the 160 fm. level. I have set to drive a level north of winze, by three men, at \$20 per metre. By June 30 I hope to make a communication with the level driving south of shaft, when I shall resume the sinking; the lode is 5 ft. wide, and yields 5 tons of ore per fathom. The 150, to drive south of shaft, by two men, at \$8 per metre; the lode is 2 ft. wide, and yields 3 tons of 40 per cent. ore per fathom. This level, to drive north of shaft, by two men, at \$9 per metre. We have better ground for driving, but the lode is broken up and disordered. I think another part of the lode is standing to the west, and after driving 10 metres more to communicate with the winze sunk from the 140 fathom level I shall cross-out west to prove it. The 140 fathom level, to drive north of shaft, by two men, at \$11 per metre; this end has greatly improved, and will now yield 4 tons of ore per fathom. This level to drive south, by two men, at \$10 per metre; lode poor. The 130 to drive north of shaft, by one man, at \$12 per metre; the lode is 4 ft. wide, yielding some good stones of ore, but not sufficient to value, although I am expecting an improvement in quality, looking at the level below; we have a few metres in advance of the 130 adit. The 120, to drive south of No. 1 winze, by one man, at \$9 per metre; the lode is 3 ft. wide, and yields 2 tons of ore per fathom. The cross-cut to drive east at the 60 south, by one man, at \$14 per metre; progress here is slow on account of hard ground. The rise in the back of the 40 north has been communicated to the 30; this has laid open a good piece of tribute ground.

I am very pleased to say that the appearance of the lode in the bottom of the mine is such as to warrant my stating that our prospects are most encouraging. I find as we increase in depth the lode is becoming wider, and the ore of a better quality. I will give you an estimate of our standing ore ground by next mail, as before doing so I shall have to measure it. I have three men stopping in the back of the 160, south of shaft, and two men in the back of the 140, south of shaft. Our product for May is 700 kilos copper ore, at a percentage of 24½ per cent.—Oreco: Price's Shaft: The winze sinking under the 80 is down 13 metres; the lode continues about 2 ft. wide, and yielding 2½ tons of ore per fathom; sinking by one man, at \$11 per metre. The 50 fm. level south lode winze sinking under this level by one man is down 10 metres; the lode in this level has recently fallen off a little in value, but it is at the present time producing 2 tons of ore per fathom; from the changes we have so often seen on this lode it is but reasonable for us to hope the falling off is but temporary. The stopes in the back of the 50 are stoping by four men; the lode continues about the usual value, producing from 2 to 3 tons of ore per fathom. We have driven the 40 north lode east on the course of the lode about 10 metres; the lode continues about 3 ft. wide, at present looking a little more promising. May production and estimated percentage—company ore, 37 tons, 14 per cent.

J. H. Vivian, June 14: Since my last report we have driven west of shaft in the 160 fm. level 2 metres more for the pit; the last metre has been driven through a lode which will yield 5 tons of ore per fathom; this part of the lode is 5½ metres of Fletcher's shaft, and which I believe will prove to be our main lode in depth. For the last eight days we have been drawing out of the mine 800 gallons of water daily, which is coming from the 150 and south, but it is now decreasing a great deal; the end also has fallen off in value. All other points of operation are without change. I beg to hand you an estimate of the ore ground standing, with percentage.—In the back of the 40, north of shaft, 300 tons. In the back and bottom of the 70, south of No. 1 winze, 300 tons. In the 80, north of the shaft, 200 tons. In the 130, north of the shaft, 250 tons. In the 140, north of the shaft, 200 tons. In the 140, south of the shaft, 800 tons. In the 150, south of the shaft, 700 tons. In the 160, south of the shaft, 800 tons. Total, 3250 tons, with a percentage of about 20 to 22 per cent. The amount of cost for May month is \$3537.23.

A petition for the winding-up of the Stud Company (Limited) is to be heard on the 26th.

Anglo-American Food Supply, General Stores, and Trading Company

(LIMITED).

CAPITAL £150,000, IN 100,000 SHARES OF £1 10s. EACH.

Of which 50,000 shares are now offered for subscription, and of which 15,000 shares are reserved for America. Payable, 10s. on application, 5s. on allotment, 5s. two months after allotment, and the remainder as required, subject to a three months' notice.

CHAIRMAN—The Honourable ASHLEY PONSONBY.

BANKERS—NATIONAL PROVINCIAL BANK OF ENGLAND, BISHOPSGATE STREET, E.C.

SECRETARY—JOHN EDWARD STOKES, Esq.

TEMPORARY OFFICES,—30, CHARING CROSS, S.W.

THE ANGLO-AMERICAN FOOD SUPPLY, GENERAL STORES, AND TRADING COMPANY (LIMITED).

In consequence of the numerous solicitations received by the Directors from several of the large provincial and seaport towns, asking them to open Branch Stores in the same, together with practical assurances of support, the Directors have decided to KEEP THE SHARE LIST OPEN FOR SUBSCRIPTIONS until AUG. 30, so that they may be enabled to open Branch Establishments almost simultaneously with the London Stores.

THE ANGLO-AMERICAN FOOD SUPPLY, GENERAL STORES, AND TRADING COMPANY (LIMITED).

The ALLOTMENT OF SHARES will be made on MONDAY, SEPT. 1, and business begun as soon thereafter as possible. Should a smaller number of shares be allotted than those applied for, the balance of the sum deposited will be appropriated towards the sum payable on allotment.

The Directors are in treaty for desirable permanent premises in London, and will announce shortly where the same will be situated.

THE ANGLO-AMERICAN FOOD SUPPLY, GENERAL STORES, AND TRADING COMPANY (LIMITED).

The real object of the company is eventually to become a large trading company, dealing principally in American and Canadian Food Supplies throughout the United Kingdom. These supplies will, to a great extent, be imported by the cargo by special through rates from the various food centres of America and Canada, and shipped direct to the company for distribution through its various branches.

As the company will purchase on the best terms in America and Canada, and as so large a demand exists for cheap food in this country, the Directors believe that the shares of the company are worthy of the attention of capitalists, as by quick sales and small profits the capital can be frequently turned over.

The importation of American food has only just begun, and the business may be regarded as quite in its infancy.

THE ANGLO-AMERICAN FOOD SUPPLY, GENERAL STORES, AND TRADING COMPANY (LIMITED).

Through its wholesale department the company expect to be able to supply the Co-operative Stores and other large dealers on most favourable terms.

THE ANGLO-AMERICAN FOOD SUPPLY, GENERAL STORES, AND TRADING COMPANY (LIMITED).

EXTRACTS FROM THE PRESS:—

THE TIMES of July 15, in a leading article, says:—

"The necessities of life, as people now count necessities, we produce cheap enough, but they can only be bought dear. . . . As yet the stores, which have met with scant sympathy from the professional freetraders, have done much more for the application of their principles to the actual wants of the consumer than the free traders themselves have done. . . . But the Stores only proved how much was to be done, and how much remains to be done. . . . What with the pride of the producer and the helplessness of the most numerous class of consumers, it is plain that an opening exists for somebody or some people to combine a very great public service with a fair return for time, trouble, and capital. . . . But quality for quality, what can England offer at the same prices that shall equal American butter at 8d., bacon and hams at 8d., and cheese at 4d.?"

FROM TRUTH, April 10 and May 1, 1879:—
"It is wonderful how these American products simplify cooking and enrich while lessening the expense of a good table, and I am amazed that the English do not take more kindly to them. The demand is only beginning; where it will end nobody can tell. . . . I believe that it is an undoubted fact that fully one-half of the beef sold as English, Scotch, and Irish is in reality American."

FROM THE ECHO, July 25, 1879:—
"It is, in fact, becoming daily more obvious that the English people look abroad rather than at home for their food supplies. Of American produce America exported last year \$120,000,000 worth more than in 1877; of live stock nearly ten times more than in the same year; of provisions, nearly double; and the greatest portion of the exports came to England."

THE ANGLO-AMERICAN FOOD SUPPLY, GENERAL STORES, AND TRADING COMPANY (LIMITED).

FROM THE LEEDS MERCURY, July 5, 1879:—
"The object of the company is to bring the British consumer into direct communication with Canadian and United States producers."

FROM THE BRADFORD OBSERVER, July 5, 1879:—
"In the prospectus attention is called to the vast development of this trade in colonial foods, and it is estimated that by direct trading between the grower and the consumer with the aid of the company, there will be a sufficient saving on the charges of the middlemen to afford great benefits to purchasers, and at the same time secure handsome dividends for the shareholders."

FROM THE DAILY FREE PRESS (Glasgow), July 7, 1879:—
"The field is undoubtedly a promising one, and, with capable management, such an enterprise ought to succeed."

FROM THE SHEFFIELD DAILY TELEGRAPH, July 21, 1879:—
"The object of the company is to afford to consumers a better opportunity of purchasing at a cheap rate the vast American food supplies which are open to this country. The company will deal exclusively with the producer, and will thus avoid the extra cost which the consumer has hitherto borne in the shape of the profits levied by agents and middlemen. A business carried on in this direction has a vast field of usefulness before it."

FROM THE BELFAST MORNING NEWS, July 17, 1879:—
"Considering the fact that a vast proportion of the food supply of the United Kingdom comes from these (Canada and United States) and other countries, and that a vast profit is made by home retailers by the sale of foreign products as English, it is satisfactory to find a company such as this in course of establishment. The directors are influential and apparently trustworthy, and we believe the enterprise to be one well deserving the attention of speculators."

FROM THE ANGLO-AMERICAN TIMES, July 11, 1879:—
"The Anglo-American Food Supply. No newspaper in London has given so much attention and devoted so much space to the food supply from America as the 'Anglo-American Times,' nor has any other so long and persistently dwelt on the revolution now in progress, which, by simplifying the distribution, is leading to a considerable displacement of industry and population. A joint-stock company which has adopted our name begins its work by inviting attention to the place it proposes to take, its object being reached by bringing the producer and consumer into almost immediate contact, thus dispensing with intermediate costs and profits, and effecting thereby a saving of from 30 to 35 per cent. These are its own words and its own calculation; but it is certain that an immense trade is open to any establishment conducted on sound principles which will devote itself to the distribution in such a centre as this of American food. The range is so wide; the variety so large; the demand so extensive and continuous; the means so ample, that an organising power only is required such as set the Army and Navy Co-operative Society in motion, and swept into one establishment the business of a hundred shops. . . . About a year ago we recommended this to the

attention of the Aylesbury Dairy Company, because they had a well arranged system of retail distribution, which employed in such a direction would have added enormously to their profits. It may be difficult to combine two very distinct branches of business; and, indeed, it requires a joint stock company organised for the purpose, as is this Food Supply Association. But there can be no doubt that one of the largest and most profitable trade lies in this new and increasing channel; for the business is as yet in its infancy in the United States. There is no other industry making more rapid strides; and the improvement in progress may yet startle Europe and open the Mississippi Valley as a storehouse practically for all purposes of supply, as now in France. A consequence will be to make London the cheapest place of residence in the world; because the change virtually converts the most productive country, though a great way off, into a suburb—a sort of dairy farm and market-garden. Its game, its fish, its fruits, its poultry, its farm stock of every description are placed in the London kitchen, coming almost as direct as if the egg were brought by the servant for the breakfast table from the nest on the spot. As yet, the people have but a dim idea of the excellence of the food thus supplied. Much of it is new, and some of it unfamiliar, so as not to be appreciated on this side, though highly prized on the other; which means that some dishes will be added to those in vogue, which the public on a better acquaintance will learn to appreciate and enjoy. For these food supply operations there is a very wide field, which will be found on cultivation to extend, and be more productive the more it is worked."

FROM THE INVESTIGATOR, July 12, 1879:—
"The 'Anglo-American Food Supply, &c. (Limited),' strictly speaking, is not a co-operative store; and indeed the management wisely drops this mischievous name. The company makes no restrictions as to its customers, but the stores will be thrown open to the public without the trouble and expense of members' tickets. This abandonment of exclusiveness, formality, and routine is a wise step. The leading feature of the company will be to supply the articles of food the produce of America, Canada, and other countries. The company proposes to import and keep in stock American and Canadian beef, mutton, game and poultry, as well as butter, cheese, lard, bacon, ham, tongue, flour, wheaten grits, oatmeal, preserved meats of all kinds, canned fish, fruits preserved and bottled, canned vegetables, such as tomatoes, peas, asparagus, and every variety grown in America and Canada. English products will also be in regular supply, and suitable arrangements will be made to obtain them direct from the producers. These are days when the question of a cheap food supply is of paramount importance, and this company has hit the right nail on the head. We hope it will strike it home effectually."

FROM THE WEEKLY TIMES, July 13, 1879:—
"We have before us the prospectus of a new company, under the title of 'The Anglo-American Food Supply, General Stores, and Trading Company,' which seems to offer more advantages to the shareholders than any previous association of a similar character. These stores hitherto have confined themselves chiefly to groceries and such like, but this new company occupies new ground by supplying, at the lowest prices, beef, mutton, game, and poultry, at from 20 to 30 per cent. cheaper than the ordinary price at which butchers' meat can now be obtained. In fact, the object for which the company is formed is to establish stores in London or elsewhere for the supply of the principal products of America, Canada, the Colonies, and other countries, to be sold at a low price for cash. If the object is faithfully carried out, it will be a great boon to the middle and lower classes, and the company may look forward to a constantly increasing business."

FROM THE LONDON FIGARO, July 26, 1879:—
"Cheap Food.—Cheap food is the great national problem, and its solution lies with English enterprise and American products. How to obtain a sufficiency of good food at prices within the reach of limited incomes, yet at the same time remunerative to the producer and the middleman, is the burning question of the day. . . . Thousands of tons of American beef and mutton have been sold in Smithfield and other markets to the butcher, who has retailed it to his customers as prime English meat, charging 'English' price for it. This most iniquitous and dishonest proceeding has led to the combination of several gentlemen, with the view of redressing the evil, and the very natural outcome has been the formation of the 'Anglo-American Food Supply, General Stores, and Trading Company (Limited),' of 30 Charing Cross. The project deserves success."

FROM THE BULLIONIST, August 2, 1879:—
"The much vexed question of cheap food supplies, doubly important as it is in times of general depression, is constantly receiving fresh illustrations in the popularity of each new attempt to introduce the products of the American Continent into this country. Although this is not the time for speculative enterprises there is ample room for any undertaking which promises to cheapen the food of the people. The prospectus has been issued of the 'Anglo-American Food Supply Company (Limited),' whose object is to establish stores in London and elsewhere at which American and Canadian produce may be obtained at a low price for cash. Applications for shares should be made at once. It is intended to open depots in all the large towns in the United Kingdom. With proper management and careful buying the company has every chance of success."

The Anglo-American Food Supply, General Stores, & Trading Company

(LIMITED).

TEMPORARY OFFICES,—30, CHARING CROSS, S.W.

Prospectuses, which fully set forth the special privileges accorded to shareholders, may be obtained of the Secretary or Bankers.

Mining Correspondence.

BRITISH MINES.

ABERDEEN.—John Roberts, Aug. 6: I hope that by the end of this week we shall complete the tramroad in the deep adit up to the forebreast. We shall then commence to put up a rise on the shale to the No. 2 to meet with the winze in the bottom of that level. This will prove the lode and ventilate both those levels. There is a branch of pure blende to begin with here. The winze at No. 2 is still looking well for blende, very similar to what it was last week. In the cross cut in this level the ground is still impregnated with lead and blende, but we have not yet discovered the lode.

BEITWS Y-COED.—Charles J. Sims, Aug. 7: We have set the western shaft to nine men, to sink at 18 ft. per fathom (takers to fill and land their stuff) for 4 fms.; this will give us the required depth for a 30 ft. level, and, as the lode is improving in the shaft, we shall speedily open up some good ore ground here. There is a very fine course of ore east of this shaft in the bottom of the 20; there has been nothing done west of the shaft. In Jones' stopes in the back of the shallow adit level the lode has considerably improved, and is now worth 1 ton of lead ore per fathom. The other stopes are without alteration. The recent heavy rains have given us ample water for the pumping wheel.

BLUE HILLS.—S. Bennett, E. Vian, Aug. 2: The ground at the shaft below the 30 continues favourable for sinking; there is not much of the lode broken, but it may let down too much water before the pumps are fixed. In the 20 east end the lode is 2 ft. wide, and yielding low quality tin stuff. The stopes in the bottom of this level are worth 10s. and 15s. per fm. The one in the back of the level is not so productive.

BODDIDRIS.—H. Hotchkiss, Aug. 6: I have nothing new to report this week; all points of development are being pushed forward with energy. The 60 east, on Maes-y-Pwll lode, is very promising, showing spots of lead ore.

CAMBRIAN MINES.—J. Glanville, Aug. 1: Esqair Frith, Eastern Shaft: The 88 yard level east continues to yield 5 tons of copper ore per yard. The 70 yard level east will produce 2 tons of copper ore per yard. The 46 yard level east will produce 1 ton of copper ore per yard; from this you will see that all the levels going east are opening up productive ground.—Esqair Hir: In the shallow level driving west the lode is 2 ft. wide, composed of carbonate of lime, sulphur, and occasional stones of good lead. In the cross-cut driving south we have intersected the main part of the great lode, which is producing stones of good lead ore, but not in sufficient quantities to value.

T. Glanville, Aug. 6: Since my report of Saturday last we have cut into a branch of copper ore 1 ft. wide, solid, in the 80 yard level west of shaft. I will write you again when I have seen more of it. All other points remain just as usual.

CLEMENTINA.—J. Roberts, W. Sandoe, August 6: The bottom end driving north of the engine shaft has improved since we commenced; there is a little branch of lead coming in on the footwall, and, as is usual with this lode, we expect that it will soon open out to a good bunch. There were bunches of lead worked down a great distance from the bottom of the 15, and we expect that we shall meet with them in continuing this level northwards, and we hope the lead now showing itself is a beginning. Till we can get the winding gear ready we are compelled to limit our underground operations to this point. There shall be no time lost over this matter.

COMBAMTIN.—J. Comer, Aug. 7: The lode in the winze sinking below the adit level is producing beautiful stones of silver lead ore. The rise above the adit level is not yet communicated with the surface, but we hope to do so in a few days. The adit cross cut north is still in a good channel of ground, and the end is letting out a good deal of water. The caunter lode in the south-east adit end is about 2 ft. wide, well defined, and producing strong spots of lead and blende.

DEE BROOK.—J. Philpotts, Aug. 6: The lode in the stopes and drift west, below the 25, is still producing good ore stuff, and retains its size and congenial nature. This deposit of ore is dipping into ground not hitherto proved by drives, and, judging from the flow of water at this point, there is an open lode before us. The quality of the ore stuff has somewhat improved of late, and the appearance of the stopes in the aggregate is encouraging. Dressing for the next sampling is going on fairly.

D'ERESBY CONSOLS.—J. Roberts, W. Sandoe, August 6: There is no change in the cross-cut as yet. The end is continually being crossed by small branches of ore.

DENBIGHSHIRE CONSOLIDATED.—R. Prince, A. Francis, Aug. 7: Since last report in our 112 east main lode we have advanced nearly 4 yards; the favourable features noticed in our last continue, and there are evidences of further improvement. The 66 looks well; we are getting some good stuff from here, and in reference to the new cross cut north I am glad to say that we have extended it 22 yards.

DEVON GREAT CONSOLS.—Isaac Richards, Aug. 7: Wheal Josiah, New South Lode Shaft. In the cross-cut south at the 130 west the ground is favourable for driving, and fair progress is being made. In the cross-cut south at the 115 west the lode has been intersected and cut through, proving 2 ft. wide, composed of capel, quartz, munda, and a small portion of good quality copper ore; this drive will now be turned westward on the course thereof.—Wheal Emma, inclined Shaft: In Dawe's cross-cut south, at the 190 east, the ground continues favourable, and fair progress in driving is being made. In the 137 east, on the new south lode, the drive is being continued by the side of the lode.—New Shaft, New South Lode: At the 205 the work in connection with cutting flats, &c., is progressing very fairly. In the 190 east a communication with the bottom of Floyd's winze has been effected, and ventilation at this point of operation is made perfect. This drive is being continued; the lode for the width carried (4 ft.) proving worth 4 tons of copper ore, or 12s., and 4 tons of munda per fathom. In the 190 west the lode is 8 ft. wide, composed of capel, quartz, peach, a little good quality copper ore, and munda, worth 8 tons per fathom. In Knot's winze, in the bottom of the 190 east, the lode, part carrying 5 ft. wide, is composed of capel, quartz, fluor, and some good quality copper ore, and worth for length of winze (9 ft.) 8 tons of munda per fathom. In the 175 east the drive is being continued by the side of the lode. In the 175 west the lode is 4 ft. wide, composed of capel, quartz, peach, prlan, and copper ore, worth 4 tons, or 12s., and 4 tons of munda per fathom. In the 175 west, east of Bartlett's stopes, on the more part of the lode, the lode part carrying 6 ft. wide is worth 8 tons of copper ore, or 24s., and 6 tons of munda per fathom. In the 115 east the lode is 5 ft. wide, composed of capel, quartz, peach, fluor, and a little of both munda and copper ores. In the 100 east, on the south part of the lode, the lode is 2½ ft. wide, composed of capel, quartz, munda, and some good quality copper ores.—Railway Shaft: In the 175 west the lode is 4 ft. wide, composed of capel, quartz, peach, prlan, and copper ore, worth 2 tons, or 6s., and 2 tons of munda per fathom. In the 175 east the lode is 6 ft. wide, and worth 3 tons of copper ore, or 24s., and 5 tons of munda per fathom. In North-west winze, in the bottom of the 115 east, the lode 4 ft. being carried is worth for length of winze (9 ft.) 6 tons of copper ore, or 18s., and 4 tons of munda per fathom. Our sampling of copper ore, for sale on the 21st inst., will be 50s. per ton.

DUBBY SYKE.—William Vipond, August 1: The men have got the clay out to the sill, and the timber in. There are some branches of barytes running through the shaft with spots of ore. The men were preparing yesterday when I was down to blast the sill, which I think is really the win. The top of this is very rugged and uneven, and at one end of the shaft it is a good deal below the level of the other. Possibly the Dubby Syke vein may be in this end, or near it, which causes the dip of the sill this way. I am not certain that such is really the case, as we have not seen this end yet as distinctly as the rest of the shaft bottom.

EAST CHIVERTON.—Richard Southey, Aug. 6: Last setting day we set the engine-shaft to sink below the 74, a lumping bargain, to complete the same to the 90, at 14s. per fathom, by six men and three boys, and I am pleased to say good progress is being made, so that I have every reason to believe we shall get below the 84 before the next general meeting. The lode in the 74 end going west considerably fell off during the last few weeks, and got very small, but during the past two days good lumps of lead have again been met with, and the lode improving as we extend. I have no doubt but what in the 90 we shall find the lode more settled, and not subjected to these fluctuations like it was in the shallower ones. Our engine and new pitwork are working splendidly, so that we have nothing to fear about the water when the lode is intersected in the 90.

EAST LOVELL.—R. Quantrell, Aug. 6: In the shaft at Severgon we are getting out of the influence of the slide referred to in my last report. The lode is better defined, and is nearly as large as it was, and contains rather more tin than last week.

EAST ROMAN GRAVELS.—Arthur Waters, August 7: The boundary engine-shaft is now the required depth below the 80 for another level (the 97), and the men are now cross-cutting west towards the lode at 10s. per fathom. They will also cross and divide the shaft 11 fms. for 6s. The 56 to drive south of shaft, by four men, at 7s. 10s. per fathom; lode improving, but at present not to value. The 75 to drive south, by two men, at 4s. 4s. per fathom; lode 2 ft. wide, worth ¾ ton of lead ore per fathom. No. 1 tribute pit in the back of the 75 south, by four men, at 3s. 10s. per ton; worth 2 tons per fathom. No. 2 pit in the back of the 75 south, by four men, at 4s. per ton; worth 1½ ton per fathom. A pit in the bottom of the 50 north, by three men, at 6s. per ton; worth ¾ ton per fathom. A pit in the back of the 50 south, by two men, at 6s. per ton; worth ¾ ton per fathom. A pit in the bottom of the 45 north, by two men, at 5s. per ton; worth ¾ ton per fathom. A pit in the bottom of the 40 north, by three men, at 6s. per ton; worth ¾ ton per fathom. A pit in the bottom of the 20 south, by two men, at 4s. 13s. per ton; worth 1 ton per fm. Tributers pay costs and 20s. per ton for dressing.

GAWION COPPER.—George Rowe, George Rowe, jun., Aug. 2: The lode in the 117 east is fully 7 ft. wide, of a very kindly appearance, yielding munda and good stones of yellow copper ore. The lode in the 105 east continues to yield 10 tons of munda and ore per fathom. The lode in the stopes below the 105, west of winze, is worth 9s. per fathom. The lode in the slope below the 105, east of said winze, is worth 10s. per fathom. The lode in the slope in the back of the 105 east is worth 10s. per fathom. The lode in the 95, east of cross-cut, is yielding 2 tons of munda and ore per fathom.

GLASGOW CARADON CONSOLS.—William Taylor, W. J. Taylor, August 4: The 102 east, on north lode, is looking better, producing some good stones of ore, although not of much value; it is likely to further improve as we get nearer the winze coming down from the 90, the lode in which is worth 15s. per fathom, and it is about 6 or 7 fathoms beyond this end. In the 102 east, on south lode, lode, is not much change—stones of ore, but not to value. The 90 west, on north lode, is disordered near the old shaft cross-course. West of this cross-course, the lode is a long run of ore ground; we hope to meet the same here. There is no change in the 90 east or cross cut south at this level. The 90 east, on south lode, is worth 5s. per fathom. The stopes and pitches, on the whole, are about the same value as last reported, and turning out about their usual quantities of ore. Our next sale will be (computed) 180 tons, which will be sold on the 21st inst.

GORSEDD AND MERLLYN.—W. Edwards, Aug. 7: In the 70 east the men have driven 1 yard 2 ft. 6 in. since last report; the vein is about 2 ft. wide, with good ribs of lead, but the ground is hard. In the 70 west the men have driven north 3½ yards since last report, and we have raised some splendid lead from here. No other change to notice.

GREAT LAXEY.—F. Reddiffe, August 6: I am pleased to be able to say that in a week from the time of resuming work everything underground is in fair working trim. Of course, with the mine having been four months idle there was much to be done in the way of examining timber, level soles, &c., but this has been so far attended to and repaired so as to enable the regular order of work to be established. In so short a time as one week there could not be work enough done to fill the various pitches to allow of many material changes, but what there are I will refer to.—Deep Mine: The 355 north has tapped more water; the lode is also

In blast August 2, 1879	90
In blast August 3, 1878	98

TIN.—There is very little change in the state of the market for

METAL MARKET—LONDON, AUG. 8, 1879

There is no general improvement to be reported from the Welsh districts, though it is said a few establishments are brisker than they were a short time back. The shipping trade has been decidedly better, and comparatively large quantities have been forwarded to the United States, and the enquiries which have recently come to hand from this country have been much more numerous. Shipments to other parts have also slightly increased, the principal quantities having been exported to Canada, Italy, and South America. The demand for rails is fairly maintained, though there is a better one existing for steel than for iron. Prices for all descriptions remain unaltered, and the request for gas-iron railway iron has somewhat improved. There is nothing new to report from the north-western Libby's manufacturing district, and our correspondents

		LEAD ORES.		
Date.	Mines.	Tons.	Price per ton.	Purchasers.
July 30—	Monydd Gorddu.....	40	£10 17 6	Panther Lead Co.
Aug. 6—	Herodsfoot.....	15	12 5 6	Newell, Druce, and C.
—	ditto	15	13 6	E. C. Goodhart and C.
—	ditto	16	7 8	Nevill, Druce, and C.
—	ditto	7	6 10 0	Vivian and Sons.
7—	Roman Gravels	50	8 14 0	Nevill, Druce, and C.
—	ditto	50	8 13 0	ditto
—	ditto	50	8 9 0	ditto
—	ditto	50	8 8 0	ditto

MINES INSPECTED AND REPORTED ON.

LEAD is said to be very much richer, and advancing. Speltz has also risen, which is important to mines selling blends. Val is 144 to 154; the 120 west is looking better. Great Lakey, 144 to 154. Herodfoot, 2 to 3; at the meeting (particulars of which will be found in another column) the accounts showed costs for three months, 1076l. 6s. 2d.; lead ore returned, 978l. 10s. 8d.; old material, 181. 139l.; leaving assets over liabilities of 650l. 4s. 1d. The report of the mine was favourable, and the agent hopes to keep up, if not increase, the return for the next quarter. D'Eresby Mountain meeting was held on Friday, and full particulars will be found in another column. The accounts showed assets over liabilities of 2406l. 8s. 7d. and with the directors' report, which, with the agent's, fully explained all the work done, and the present satisfactory position of the mine, were unanimously adopted and passed. Aberlynn, 10

12; Clementina, 3 to 14; Denbighshire, 1 1/2 to 1 3/4; Gorse, 1 1/2 to 2; West Holway, 1 to 1 1/2; Great Holway, 1 1/2 to 5; East Van, 1 1/2 to 1 3/4; Glenroy, 7s. 6d. to 10s.; Leadhills, 1 1/2 to 1 3/4; Roman Gravel, 7 1/2 to 7 3/4; the sale of lead ore this week, 200 tons, realised 1710s., or 6s. per ton more than the last sale. No material change in the mine. Tankerville, 2 to 2 1/2; Tyn-y-fon, 7s. 6d. to 10s. Pateley Bridge statutory meeting was held on Thursday; the mine looks well. West Pateley, 2 1/2 to 2 3/4; Tamar, 1 1/2 to 1 3/4; Caron, 2 to 2 1/2; Frongoch, 1 1/2 to 2; Grogwinion, 2 1/2 to 3; Hartington Moor, 1 1/2 to 2; Crosswood, 1 to 1 1/2; Mawston, 1 1/2 to 2; Red Rock, 1 1/2 to 2; St. Harmon, 1 to 2; West Wye Valley, 1 1/2 to 2; Wye Valley, 1 1/2 to 1 3/4; Gwynnynydd, 4 to 4 1/2; Bwch, 22s. 6d. to 25s.

FOREIGN MINES.—Canada Gold, 2 to 2 1/2; Arendal, 3 to 3 1/2; Cape Copper, 26 1/2 to 27 1/2; Blue Tent, 2 to 2 1/2; Placerville, 2 1/2 to 2 3/4; Ruby, 1 1/2 to 2 1/2; Colorado, 1 1/2 to 1 3/4; Eberhardt and Aurora, 1 1/2 to 2 1/2; Frontino and Bolivia, 1 1/2 to 2 1/2; Hornachos, 6 1/2 to 7 1/2; New Quebrada, 1 1/2 to 2 1/2; Port Phillip, 8s. to 10s.; Richmond, 8s. to 8 1/2; St. John del Rey, 25 1/2 to 27 1/2; Santa Barbara, 30s. to 35s.

The Market for Mine Shares on the Stock Exchange has shown some little improvement, although the holiday with which the week commenced prevented general revival, which might otherwise have been anticipated. The prospects of mining are certainly brighter than they have been for some time past, for the depression has produced an amount of attention to the introduction of greater economy, which will prove of permanent benefit to the mining interests of the country. It was not unfrequently stated by foreigners that English miners were far behind those of the Continent, and that it was only the greater richness of the British minerals that enabled them to be worked at all. There was, doubtless, a large amount of truth in this assertion, but although much water and engine power are still wasted in this country, to the serious diminution of profits to the shareholders, the mine managers are showing satisfactory progress. A few years since it was considered scarcely possible to return tin from Cornish mines at 50s. per ton, yet during the past three months the West Pevor Company have succeeded in returning it at 27s. per ton, and the Wheal Eliza Consols at 25s. per ton, prices which will not only enable Cornish tin to compete with that of any other region, but will enable good profits to be realised for the shareholders at any price likely to obtain. The advantage both to capitalists and dealers of the principle of shares to bearer is very clearly shown from the manner in which share dealing business is carried on in Paris. The commandite company, J. David and Co., is constituted with a capital of 5,000,000 frs., in shares of 500 frs. each, and owing to the habitual practice of French companies shares being "to bearer," they are enabled to declare that they never hold shares or money belonging to anyone (meaning except themselves). The seller of shares offers them the certificates of the stock he wishes to dispose of, arranges the price, exchanges the certificates for the cash, and goes about his business. The buyer asks for so much of a certain stock, is told at what hour he can be supplied, if at all, and then, exchanging his money for the stock, the business is ended. Upon such a system, it matters little to the capitalist whether the dealer be honest or otherwise, solvent or insolvent; for it will be seen that, practically, the public speculator deals directly with the jobber. The system works admirably, and at the present moment the amount of share business done in all kinds in Paris is really astonishing. If the same ready-money system could be introduced here it will give far more satisfaction to capitalists, and the complaints of losses would be much fewer.

The Banque Européenne pour favoriser les Travaux Publics l'Industrie, le Commerce et l'Agriculture are inviting subscriptions for 40,000 shares of 500 frs. each, at 700 frs. per share, or 200 frs. per share premium. This bank is the first new creation of the celebrated Mr. Simon Philippart, who failed about two years since with a balance of more than 28,000,000 frs. of liabilities over assets. This balance he has cleared off in the two years, and is now restarting with renewed energy, every one wishing him the utmost success. A Brussels correspondent writes that the Philippart revival is the principal topic of interest here now, and the new European Bank is dealt in at a considerable premium, for the coming out thus upon the price of issue of 700 frs. there is already a considerable advance, and business is done at 735 frs. At the same time, many of the securities with which Mr. Philippart was connected have been disintegrated from their oblivion, and are quoted at prices which they have not seen for a very long time. There is no doubt that the new bank will be supported both in Brussels and in Paris. Various obligations are steady, at 166 to 167 frs.; and, as there are very few remaining here now the English holders have the entire command of the market, and can do what they like with them, consequently higher prices than have hitherto ruled may be expected. The conversion of the 4 1/2 per cents. into 4 per cents. may be regarded as a *fait accompli*. The new issue of Government Stock for about 100,000,000 frs. for Public Works will shortly be made, and will, probably, be in a Three per Cent. stock.

It is reported that the negotiations between the French, Italian, and Swiss Governments in connection with the project for tunnelling the Simplon are going on with great activity. Mr. Leon Say is said to be an active partizan of the Simplon scheme, which will actively compete with St. Gothard. It is estimated that the cost will be under 6,000,000, but if so it must be a very high level tunnel. Mr. Leon Say and eminent engineers will visit the mountain during the parliamentary vacation.

English and Australian Copper, 1 1/2 to 1 3/4; the report for the six months' working, ended Dec. 31, shows an estimated loss of 1253s., owing to the depression in the copper market. The reserve, however, still stands at 9956s., so that there need be no fear that a revival will take place long before that is exhausted. In the meantime economies are being introduced, of which the shareholders will have permanent benefit.

The Tolima Company directors' half-yearly report shows an estimated profit on the 12 months ending May of 11,252s. 3s. 5d. This appears to refer to Frias alone. The report goes on to state that the anticipations that the mine would improve in depth have been realised. Great attention has been paid to the surface works, and more ore thus obtained. The only cause of anxiety which has arisen during the past six months has been due to apprehensions respecting the adequacy of the water-power available for the works, the continued extension of the mine, both laterally and in depth, creating demands which it was feared would prove in excess of the disposable pumping power; and although the present requirements have been met by modifications in the machinery and improvements in the application of the water-power, the directors have perceived that at no distant period additional water must be provided. Under their instructions, therefore, surveys have been made with the object of ascertaining the feasibility and cost of bringing in the waters of the Claras river, as an auxiliary to the Frias stream, at present the only motor available for the company's works, and as it is reported that the requisite cutting could be executed at a cost of about 2000s., the eventual prosecution of that work has been decided upon. The Alto gold washings have not been got into full operation, the water being limited, but a fair return of gold has been obtained by the native system.

Richmond, 8 to 8 1/2; the usual telegram from the mines at Eureka, Nevada, states that the week's run was \$65,000, from 1145 tons of ore. During the week the refinery produced doré bars to the value of \$45,000. The manager (July 16) reports that there is nothing new to report from the mine. No. 11 chamber not looking quite so well. In No. 12 chamber considerable ore still in view. The furnaces are doing good work; the average smelting for last week was 77 tons per diem each. The machinery is all in good working order.

Referring to the Bingham (Old Telegraph of Utah) Mines, the Credit National of this morning says that the news from the mines continue favourable, and that the shipments of ore from the mines prove that Utah is not so despicable a State as Colonel Berton would make out before launching the Amador Volcano. The gold vein predicted by Professor Clayton in 1873 has now been laid open.

Lead Mine Shares continue in good request, and although there has been no appreciable improvement in the price of the metal holders are less disposed to accept current rates; miners are consequently looking for a speedy rise in the price of ores, and with it a return to satisfactory profits. As the majority of lead mines are now more cheaply worked than they were two or three years ago it is confidently anticipated that before long the dividends earned will make lead mines a favourite investment. At Roman Gravel the parcel of lead sold (300 tons) realised 6s. per ton more than that previously sold, and a few similar improvements would give entirely new life to the market for lead mine shares. Van, 14 1/2 to 15 1/2; the end at the 120 west is looking better. No particular change elsewhere.

Mineral Corporation, 11 1/2 to 12 1/2; an engineer connected with the Journal des Mines has been investigating the lead and silver-lead deposits of the British Isles, and states that argentiferous galena is frequently met with in England, and is worked in 21 counties, but among the lead deposits of Great Britain one of the most remarkable is the group of veins of Great D'Eresby and Canadon, in North Wales. A series of veins here cross each other, and of these the Hafna is the most important, giving to the lead body great interest, both from technical considerations and from its richness and facilities for exploration. He has made a series of notes concerning the D'Eresby district, which he promises to give in a subsequent communication. This view is fully confirmed by an octogenarian Cornish miner who has had great experience in all parts of the world, and is now himself a large holder of shares in the D'Eresby district. He says there is no question as to the mineral wealth of the entire mountain, and that all that is required to make the mines remunerative to the shareholders is energy, a little patience, good management, and a little better price for lead. He is of opinion that the Hafna will be one of the best in the district, and that it is also one of the best managed mines in Llanrwst, although the manager writes less about geological theory and the correct principles of management than some of his neighbours. Operations at the mines are progressing as usual. They have commenced stripping

down the lode left standing in No. 3 adit, and find it better than expected. Mr. Evans, the Government Inspector, visited the mines on Wednesday, inspected the mines underground and at surface, and expressed himself pleased with the mines and the manner in which they are worked.

Grogwinion, 2 1/2 to 3; no fresh news since the meeting. Frongoch, 1 1/2 to 2; everything reported to be progressing favourably at the mine. Caron, 2 to 2 1/2; the deep level is making good progress, the lode being of a promising nature. Wye Valley, 1 1/2 to 1 3/4; a parcel of 40 tons of lead has been sampled for sale next week. The mine is looking well. West Wye Valley, 1 1/2 to 2; no fresh news this week. Red Rock, 1 1/2 to 2; the new capital is being well subscribed, and it is believed that the full amount will be forthcoming. Mawston, 1 1/2 to 2; Hartington, 1 1/2 to 2; Crosswood, 1 to 1 1/2.

Pant-y-Mwyn are quoted 3 to 3 1/4, and a correspondent writes that "This mine continues to open out well, they are continually meeting with fresh courses of ore, thereby increasing the reserves, and it is believed that good dividends will be resumed after the clearing of the day level. Rhydydd, 10 to 11; this mine is considered to be one of the best speculations in the Principality, and with an increased price for lead the profits would be considerable."

Pateley Bridge, 1 1/2 to 1 3/4; the statutory meeting was held on Thursday. A full report will be found in another column. The mine is stated to be looking exceedingly well, and the prospects of the company are satisfactory.

Subjoined are the closing quotations:—
Asheton, 1 1/2 to 1 3/4; Carn Brea, 15 to 18; Devon Great Consols, 1 1/2 to 1 3/4; Dolcoath, 24 to 26; East Caradon, 1 1/2 to 1 3/4; East Van, 1 1/2 to 1 3/4; Gwynnynydd, 4 to 4 1/2; Great Lacey, 15 1/2 to 15 3/4; Hington Down, 1 1/2 to 1 3/4; Leadhills, 1 1/2 to 1 3/4; Marke Valley, 1 1/2 to 1 3/4; Parys Mountain, 1 1/2 to 1 3/4; Pateley Bridge, 1 1/2 to 1 3/4; Roman Gravel, 7 to 7 1/2; Tankerville, 2 to 2 1/2; Van, 15 to 16; West Asheton, 1 1/2 to 1 3/4; Tankerville, 2 to 2 1/2; Wheal Crobar, 1 1/2 to 2 1/2; Almada and Tinto, 1 1/2 to 1 3/4; Blue Tent, 2 to 2 1/2; Cape Copper, 27 to 27 1/2; Canada Gold, 2 to 2 1/2; Chontales, 1 1/2 to 1 3/4; Colorado United, 1 1/2 to 1 3/4; Don Pedro, 5-16ths to 7-16ths; Eberhardt and Aurora, 2 to 2 1/2; Exchequer, 1 1/2 to 1 3/4; Flagstaff, 1 1/2 to 1 3/4; Frontino and Bolivia, 1 1/2 to 2 1/2; Hultafall, 1 1/2 to 2; I.X.L., 1 1/2 to 1 3/4; Javali, 1 1/2 to 1 3/4; Kapanga, 1 1/2 to 1 3/4; New Quebrada, 1 1/2 to 2 1/2; Pestana, 1 1/2 to 1 3/4; Plumas Eureka, 2 1/2 to 3 1/4; Placerville, 2 1/2 to 3 1/4; Port Phillip, 8s. to 10s.; Richmond Consolidated, 8 1/2 to 8 3/4; Rhydydd and Dunderberg Consolidated, 2 to 2 1/2; St. John del Rey, 25s. to 26s.; Sierra Buttes, 1 1/2 to 2; United Mexican, 2 1/2 to 3.

TRAMWAYS.—The closing prices this evening, as quoted by Mr. W. Abbott, Tokenhouse yard, were—Anglo-Argentine, 4 1/2 to 4 3/4; Barcelona, 10 1/2 to 11 1/2; Birkenhead, 5 1/2 to 6 1/2; Ditto 6 per cent. Pref., 10 1/2 to 11; Belfast, 8 to 8 1/2; Chester, 9 1/2 to 10; Dublin, 12 1/2 to 13 1/2; Edinburgh, 15 to 15 1/2; Glasgow, 9 1/2 to 9 3/4 ex div.; Hull, 12 1/2 to 13 1/2; Imperial, 10 to 10 1/2; Leeds, 9 1/2 to 10 1/2; Liverpool, 11 1/2 to 12 1/2; London, 11 1/2 to 12 1/2; London Street, 11 1/2 to 12 1/2; North Metropolitan, 14 1/2 to 15 1/2; Provincial, 11 1/2 to 12 1/2; Sheffield, 8 1/2 to 9; Sunderland, 9 1/2 to 9 3/4; Tramway Union, 6 1/2 to 6 3/4; Vale of Clyde, 4 to 4 1/2; Wolverhampton, 9 1/2 to 10; Yarmouth, 8 1/2 to 9 1/2; Hughes Locomotive and Tramworks, 9 1/2 to 10; Tramways and General Works, 6 1/2 to 7 ex div.; Tramways of France, 10 to 10 1/2 ex div.; Tramways of Germany, 10 to 10 1/2.

MELANEAR COPPER MINE COMPANY.—The directors at their meeting on Wednesday declared a dividend out of the profits of the past half-year of 2s. per share (equal to 10 per cent. per annum on the capital) payable on the 20th inst. Besides which 150s. has been added to the reserve fund, increasing it to 690s., and the balance of the preliminary expenses account, 311s. 5s. 10d., has been completely written off. This cannot but be considered as extremely satisfactory, when the extraordinarily low prices which have ruled for copper are taken into account.

SOUTH DAREN.—It is satisfactory to know that at least one lead mine is at present making a profit, and is likely soon to resume dividends. The ore being rich for silver fetches a good price even in these very depressed times. The price realised last week was 13s. 12s. 6d. per ton, and even now the monthly returns of lead and copper are nearly 850s. These returns will be increased, and, with an advance in lead, will greatly enhance the value of this property. The 100 ft. level west is worth 1 1/2 ton of lead ore per fathom. The slope in roof, west of winze, 2 tons. No. 1 slope in roof, east of winze, 1 ton. Two slopes in the 90, 1 ton each. Winze just begun below the 90, 1 1/2 to 2 tons. The slope in back of the 80, 1 1/2 ton per fathom. The shaft is almost down to the 110, where the levels are expected to be even richer than the upper ones, as the lode has considerably improved in sinking upon it.

MELBOURNE EXHIBITION.—The first meeting of the London committee of the Royal Commission issued under the Great Seal of the colony of Victoria for holding an International Exhibition at Melbourne in October, 1880, was held on Tuesday afternoon last, at the office of the Agent-General for Victoria. There were present the Right Hon. Hugh C. E. Childers, M.P., in the chair; Sir Henry Barkly, G.C.M.G., Colonel Pasley, R.E., Mr. A. T. Thomson, the Hon. J. A. Macpherson, and Mr. Cashel Hoey, secretary.

DEPRESSION OF TRADE.

A Committee of the House of Commons on Railway Amalgamation has reported that where competition in coal and goods traffic exists by sea it should be encouraged and amplified, and that the capacities of canals should be developed and utilised. In accordance with this recommendation, it is proposed in the interest of the coal proprietors and others that a tidal navigation should be constructed from the sea to the vicinity of Yorkshire, Derbyshire, and Nottinghamshire coalfields, which large steamers could traverse and load and unload in. In order to fix upon the most central and convenient position, Bawtry has been selected as the terminus of the navigation. Bawtry is on the River Idle, and is distant 20 miles from Barnsley, 8 from Doncaster and Retford, 15 from Rotherham, 18 from Sheffield, 22 from Chesterfield, 20 from Mansfield, 2 1/2 from Tversal and Pleasty coal pits, and 34 from Nottingham. It is proposed to provide two short lines of railway, extending from Shireoaks to Bawtry, 10 miles, and from Rotherham to Bawtry 14 miles, making a total length of 24 miles. The tidal navigation would be entirely free from the existence of any lock, and would consist of 15 1/2 miles of the River Trent from Whitton to Owston, which would have to be straightened, widened, and deepened, and 12 1/2 miles of our new tidal and navigable cut or channel from Owston to Bawtry. The district to be traversed by the proposed navigation is a low-lying fen, practically a dead level, and below the level of high water, and, therefore, only a minimum amount of excavation would be necessary.

The coal rates from South Yorkshire, &c., by the railways to London amount to about 8s. 6d. per ton, whereas by sea from the Northumberland and Durham ports the freight is only 4s. 6d. per ton. From Bawtry to London by the proposed navigation it is estimated the freight would be 4s. per ton. The establishment of a shipping place for larger steamers in a central position like Bawtry would certainly enhance the value of the coal and other properties situated on this portion of the Midland and South Yorkshire districts. It is alleged that an impetus would be given to the coal and other trades, that the amount of foreign, coasting, and London traffic by sea would be much increased, and that the coal trade from Bawtry alone would probably reach 1,500,000 tons per annum. The estimated cost of the undertaking as made by the engineer, Mr. Hamilton Fulton, Mem. Inst. C.E., amounts to, it is said, 750,000l. The drainage also of the Fen district, through which the proposed navigation would pass, would be much facilitated. Altogether, it appears to be a proposal worthy of the serious consideration of the coal and iron proprietors and manufacturers of South Yorkshire and the other localities interested, and which might be the means of securing to the localities the same facilities of sea traffic as are now possessed by the Northumberland and Durham coal fields.

THE WEST INDIAN GOLD MINES.—Advices from Havana say that work on the newly discovered gold mines will probably begin in October or November with 10,000 labourers. The mining company has received liberal concessions from the Government.

REVIVAL OF THE AMERICAN IRON TRADE.—Recent returns show a very decided improvement in this great industry all through the United States. The following table shows the number of furnaces in and out of blast at the present time, and at the corresponding period of the two previous years:—

	1877.	1878.	1879.
In blast	259	248	287
Out of blast	443	460	408

It is rather singular that the chief increase among the furnaces in blast (the total number in the States consisting of charcoal, 257; anthracite, 226; bituminous, 202) is in the charcoal and bituminous, rather than in the anthracite, as would be imagined. The production of iron, however, has increased in a greater ratio than the actual

number of furnaces working. The iron trade has greatly extended its localities of late years, and is now to be found as follows:—Pennsylvania, 233 furnaces; Ohio, 103; New York, 59; Virginia, 33; Michigan, 25; Tennessee, 23; Kentucky, 23; New England, 18; New Jersey, 20; North Carolina, 7; West Virginia, 12; Georgia, 11; Alabama, 12; Indiana, 6; Illinois, 12; Wisconsin, 14; Minnesota, 1; Texas, 1; Utah, 1; Oregon, 1. It is also in contemplation to erect ironworks in Colorado, near the city of Denver.

THE AMERICAN OUTPUT OF COAL.—It is estimated by United States statisticians that more coal will be mined this year than was mined in 1877 or 1878. In 1877 the anthracite regions yielded 21,000,000 tons, and although in 1878 the demand was curtailed to 17,000,000 tons, it is expected that close upon 30,000,000 tons will be required this year. By the middle of July the output had reached 12,750,000 tons, against 7,300,000 tons for the corresponding period last year. The full average production is estimated at 500,000 tons a week, and it has reached on one occasion 655,000 tons. For the week ending July 12 the production was 531,613 tons, against 279,613 tons for the corresponding week of last year. It is said that the wages obtained last year left the miners impoverished, while those that are paid this year are barely sufficient to yield a living.

OFFENCES AGAINST THE METALLIFEROUS MINES REGULATION ACT.—Mr. F. C. Arkwright, of Willersley Castle, a Justice of the Peace for the county of Derby, was summoned before the Wirksworth magistrates on Tuesday, by Mr. Evans, Inspector of Mines, for neglecting to cause the tops of two mines, situate in Ibbie Wood, to be securely fenced. Mr. Leech, of Derby, instructed by the Home Office, supported the charge, and Mr. Small, of Burton-on-Trent, defended. The case occupied nearly two hours. Mr. Leech contending that Mr. Arkwright, who held the mines under lease from the Duchy of Lancaster, was liable as owner, the Act classifying lessees as owners with regard to liability as to fencing, and Mr. Small maintaining Mr. Arkwright not being beneficially interested in the mines, or receiving any pecuniary benefit therefrom was not liable. That the mines were not fenced at all was not disputed, the point raised being simply whose duty it was to fence them. After half-an-hour's deliberation the Bench said they had decided to convict, and the fine would be 1s. and costs.—Benjamin Spencer, of Middleton, was also fined 1s. and costs for a similar offence on the same date which he admitted.—A third charge against W. Tomlinson was withdrawn for want of conclusive evidence.

UNPRECEDENTED DEPRESSION IN CORNISH MINES.—In running over some of the Old Cornish mining districts one is struck with the great difference, the tremendous changes, wrought in our midst in the last (say) ten or fifteen years. Who would have imagined in 1865 or 1870 that in 1879 only three mines would be working in all the following parishes taken together:—Braage, Sithney, Crowan, St. Hilary, Gwiness, Wrendon, St. Erth, Phillack, and St. Ives. Yet such is the case. And who would have thought that all the flourishing mines of St. Just would dwindle down to five, or that the St. Agnes district would only turn out two or three working mines? We may say that all the Cornish mining districts, except the Redruth and Camborne district, have been beaten by the times. In the face of these disheartening facts it is cheering to see that this one remaining district shows no signs of decay as yet. True, there are several mines which cannot stand very long with tin at 30s. to 35s. per ton, but, taking the district as a whole, it has a healthy aspect, and Cornwall cannot be altogether beaten out of the tin market by Australia and Tasmania while it possesses such mines as Dolcoath, East Pool, South Condurrow, South Frances, Pevor, Carn Brea, and some others we might mention. Over 75 per cent. of English tin comes from the Redruth and Camborne tin mining district.—*West Briton.*

GENERAL MARKETS.—There has been little or no business doing again this week, and markets consequently in the absence of any support have all fallen away. English railways continue dull, and are likely to be so in my opinion. Traffic returns still show very heavy decreases, and as many lines have a considerable amount of new capital to pay on this half-year the prospect is anything but cheerful. The fall this week has been pretty general—from 1 per cent. to 2 per cent. all round. The Midland dividend is very satisfactory—5 per cent.; the same as paid this time last year. Foreign stocks are mostly lower. Egyptian stocks are dull, their affairs being still in a very unsettled state. Turkish, too, have been flat, owing to the adverse political news from Constantinople. There has been a good deal of business in Grand Trunk Railway and Great Western of Canada shares on the prospect of an arrangement for joint working between the two companies. Matters, however, do not progress very rapidly, and it seems to me they are as far off a settlement as ever. The proposition of the Grand Trunk directors to "pool" the whole takings of both railways is considered by far the best plan for both parties, as the mere "pooling" the competitive traffic would lead to endless disputes. Mines continue dull.—W. H. H. WATSON: 1, St. Michael's alley, Cornhill, E.C.—Friday Morning, August 8.

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Notices to Correspondents.

* Much inconvenience having arisen in consequence of several of the Numbers being the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

ENGLISH AND SCOTTISH BOILER INSURANCE COMPANY.—The address of the registered offices of this company, which has recently been formed, is required. It is believed to be a Manchester undertaking.

THE COPPER MARKET, AND ITS PROSPECTS.—We are obliged to our Sydney correspondent for sending the communication, but we were enabled, by the courtesy of a friend, to publish an early copy of it in the Journal of July 5.

Received.—"W. M." (Lubricants).—"J. P."—"Justitia"—"S. B." (Birmingham).—"We shall be glad to hear again."—"G. B."—"J. P." (Aldon).—"R. C. H." (Warwick).—"G. G. B." (Liverpool).—"C. M." (Brynker).—"Shareholder" (Great Wheel Vor).—"Engineer" (Glasgow).—"Shareholder" (West Franches).—"Shareholder" (Great Wheel Vor).—"Cockney."

* INSTITUTION OF MECHANICAL ENGINEERS.—In consequence of a pressure of matter we are compelled to postpone our Report of the Institution of Mechanical Engineers' Meeting at Glasgow. The insertion of several other articles is also unavoidably deferred.

THE MINING JOURNAL.

Railway and Commercial Gazette.

LONDON, AUGUST 9, 1879.

LEAD MINING IN DERBYSHIRE.

It has been truly remarked that of our mineral industries none is so uncertain as lead mining, for whilst as regards most others the material is in regular layers or deposits, such is not the case with lead; therefore, as year after year we find our production of ironstone and some other metals increasing, the reverse has been the rule as to lead. Thus we find that even last year the output in the United Kingdom was only 74,771 tons, whilst 30 years ago (in 1848) it was 78,944 tons, and in 1856 it was 102,000 tons—the largest quantity recorded. This decline is not so much the result of the exhaustion of the ores as of low prices and certain circumstances connected with the working of mines, many of which during the last decade or two have been abandoned owing to water and other causes. But no county in which lead is raised appears to have been so liable to fluctuations as Derbyshire, where ore was worked by the Romans, traces of whose skill and handiwork are to be found in many parts of it. Still, what most strikingly forces one in looking at the past history of the lead districts in the county is the large number of mines which have been opened out, and the small quantity of ore they have produced. In 1872 there were no less than 194 mines from which ore was extracted, yet the total of the whole only amounted to 5165 tons, so the probability is that not one-fifth of them could have been worked at a profit. In some instances not more than from 5 to 10 tons of ore were raised during the year at one mine, whilst seven gave a yield of 3524 tons, or more than two-thirds of the entire tonnage, each of the others giving less than 60 tons. In 1877 also two mines gave more than all the others put together, which numbered at least 132, and the same appears to have been about the state of affairs in 1878. This in a great measure is due to the facility with which land can be broken into or mines transferred, as well as to the fact that there are more miners than can be employed by companies and firms having capital, so that the poor men are glad to work on their own account in any concern. They have also the option, as we have before pointed out, of opening fresh ground on their own account, seeing that by the peculiarity of the mining law they are empowered to search and dig for ore on other people's property. This privilege has been taken advantage of by many workmen, as we found during our recent visit, whilst others have been glad to delve in mines which were abandoned when lead was higher in price than it has been during the last year or two. Such transfers appear to be most simple and inexpensive, all that is necessary being an entry of the change in the barmaster's book, and the payment of a fee of 1s. In some instances, too, the men are put on tribute, but no matter on what terms such miners work many of them do not make more than 10s. or 12s. a week, and some even less. At the same time companies and private firms working mines with plenty of capital have also felt the pinch for a long time, owing to the low price of ore, and the great disadvantage they labour under from a want of railway accommodation. But even where mines are connected with branch or other lines it is evident lead cannot be worked at anything like a profit, otherwise Mr. BRAUMONT, M.P., would not have closed some of his mines, as he is the largest owner of lead mines in the world, for the royalties and freehold rights which belong to him in the county of Northumberland alone extend over more than 100 square miles, in addition to extensive leaseholds in the county of Durham.

It is under such circumstances as noticed in last week's Journal that a deputation of mineowners, holding under the Duke of DEVONSHIRE, waited upon his Grace at Chatsworth, for the purpose of obtaining a reduction of the existing royalties, and with respect to these we purpose giving some particulars, to make them clearer than they have been made. It should, however, be stated that the lead in Derbyshire varies a great deal in quality, some of it being the reverse of rich in metallic lead, without any silver whatever, one of the most favourable returns for the county giving the fifth of an ounce of silver to the ton of ore, whilst Shropshire gives 14 ozs., Cornwall 12 ozs., Cumberland 5 ozs., Westmoreland 9 ozs., Cardiganshire 8 ozs., and the Isle of Man upwards of 40 ozs.; yet the poor ores of Derbyshire pay a comparatively high royalty as compared with other districts where the ore is very much richer. The royalties or dues, too, known as lot and cope, appear to have undergone no revision whatever for many years, nor has the tithe charge (equal to 1-40th), although the price of lead has fallen so low that it cannot be raised and made to pay a profit. The QUEEN, in right of her Duchy of Lancaster, is entitled to the minerals in what is known as the King's Field, and has leased the duties to several persons being the landowners or owners of manorial rights. The Duke of DEVONSHIRE is entitled to the duties in the manors or liberties of Ashford, Hartington, Peak Forest, and Tideswell, and with others as tenants in common to the mineral duties in the manor or liberty of Crich, Stony Middleton, and Eyam. The duties paid are what are known as "lot and cope" and are somewhat peculiar, and by no means uniform. Wirksworth, a fine old Roman town, is the capital of the lead trade, with a Mote Hall, in which all mining disputes are tried, there being a Grand Barmote Court and a small Barmote Court, with steward or judge, juries, &c.; and in the Hall is kept the dish presented by HENRY VIII. for measuring the ore, and is now in excellent condition. Within the Soke and Wapentake of Wirksworth are a considerable number of lead mines, and within its boundaries, according to the mineral articles, the lot paid to the lessees is to be 1-13th part of all the ore raised; in the manor or liberty of Crich 1-9th part of all the ore raised; in the manors or liberties of Peak Forest, Tideswell, Ashford, Hartington, Stony Middleton, Eyam, Youlgrove, and Litton 1 13th of all ore raised. The duty called "lot" is to be set apart and taken by the barmaster when he measures any ore. The duty called "cope," in the wapentake of Wirksworth, is 6d. for every load of ore measured; in Crich and Ashford 6d., and in the liberties of Hartington, Peak Forest, Tideswell, Eyam, Stony Middleton, Youlgrove, and Litton 4d. for every load of ore measured. As to the load, we are told that "every such load, as aforesaid, is to contain nine dishes." The dishes or measures for the wapentake of Wirksworth and manor of Crich is to be the standard brazen dish in the Mote Hall at Wirksworth. For the other manors the dishes or measures shall be adjusted so as to contain 15 pints of water. The barmaster or his deputy is also entitled to 3d. per load upon all ore measured in the soke and wapentake of Wirksworth, exclusive of lot and cope tithes.

In some instances it may be that the dues stated are not enforced,

or some reduction made, yet considering the quality of the Derbyshire lead ores, how inferior they are, and at many places giving such a poor percentage of lead, it will be evident that the royalties or dues are particularly high, and such as cannot admit of mines yielding even a small profit, even where the output is considerable. But it is a fact that there are not a dozen mines yielding each 100 tons and upwards yearly, whilst in 1877 there were 80 mines that only gave a total of 131 tons altogether. It is plain, then, that some of those persons who may be designated mineowners must be in a state of extreme poverty, and that their perseverance has been such as to entitle them to the thoughtful consideration of the lessees holding under the Duchy of Lancaster. Shareholders of the few companies there are have long been without dividends, whilst private capitalists who have embarked in lead mining we may feel assured have not had a return for the money they have invested. The only persons who have been benefited by the exertions of those who have been working hard in the expectation of prices improving are the lessees, and it is certainly not asking too much that they should make some concession. In some few instances a large amount of capital has been expended in putting down powerful engines and pumping machinery, and where this has been done there has been a marked increase in the production of ore. Mr. WASS has spent some thousands of pounds on the Millclose Sloop Mine, and has been able to draw out upwards of 100 tons of good ore monthly. Indeed, the bulk of the output is in the hands of a few individuals and companies. Taking the latest detailed returns, we find that in 1877 the yield of all the lead mines in Derbyshire was 5066 tons. Of this quantity Mr. WASS obtained from the Millclose 1383 tons, Wakebridge 423 tons, Bright's Friendly 211 tons, Bage 161 tons, Elton Cross 19 tons, Bull Tor 23 tons, Hardbeat and Heyspots 20 tons, Moletrap 15 tons, or a total of 2255 tons. The Mill Dam Mining Company obtained from the Mill Dam pit 1301 tons, and from Silence 11 tons, altogether 1312 tons. The next largest scorer is the Eyam Company with 263 tons, then Mr. ASHTON, of Pindale Mine, with 159 tons, so that four firms or companies from some 11 or 12 pits obtain 3989 tons of ore, being more than three-fourths of the entire yield, leaving 1077 tons to be divided amongst about 100 other mines. Mr. WASS, we may say, is a most enterprising man, and has some mines that do not pay, but that is a strong reason why his spirit and enterprise should be seconded by those who benefit by it to the extent the lessees do. As to the poor unfortunate working mineowners, who struggle so hard to get a bare existence, we certainly think they are entitled to the sympathy of the Duke of DEVONSHIRE and the other personages who draw lot and cope upon every ton of lead that is raised in the county. At the present time the toll is by far too high, not only compared with the royalties paid in other districts, but when compared with the quality of the ore itself. Unless, then, a reduction is made the present production must decline considerably, and Derbyshire lead mining sink lower than it has yet done. We, therefore, do not consider the request at all unreasonable that the lot and cope, as well as the tithe, should for a specified time at least be suspended.

This would have the effect of causing a good deal more ore to be raised, and new ground broken, so that ultimately the lessees would be more than recompensed for the little sacrifice they have been asked to make during a season of more than usual depression, when lead is at so low a price that even those who have had to pay no royalties for it have been obliged to close their mines so as to save themselves from loss.

EXHIBITION OF MACHINERY.

Inventors and makers of machinery at the present day evidently do not intend to hide their works under a bushel, but seem determined to hold them up to public view on every occasion that offers. At past Agricultural Shows we only found machinery specially adapted for farming purposes, but now we find at some of them not only steam and mechanical appliances for husbandry, but mining engines, air compressors, coal-cutters, rock-drills, steam pumps, &c. At the Yorkshire Agricultural Show, held at Leeds during the present week, we noticed a large and varied collection of machinery, much of it peculiar to the town, adapted for mining and manufacturing purposes, and aided by steam power, many of the machines were seen in full operation. Foremost amongst these was the Ingersoll Rock-Drilling Machine, working away at some blocks of granite, and perforating them with comparative ease. It was stated that the drill, which is in every way self-acting, gives from 500 to 1000 blows per minute, rotating in the operation, and going forward as the perforation deepens. It attracted a good deal of attention, and certainly did its work well. MARSDEN'S famed stone-breakers of different sizes were exhibited, some of them being so small as to break a nut, and others to pulverise great lumps of stone or the hardest ore. It is sufficient to say the machines were all that could be desired, and in every way maintained the high reputation of the firm. Roots' blowers are known far and wide, and a number of them were in full operation at the exhibition, while several of THWAITES BROTHERS' steam-hammers, with self-acting valve motion, are in operation, working to perfection. All the way from Cardiff and Merthyr Tydvil show the patent automatic self-sustaining hoists or lifts, and most ingenious, useful, and simple contrivance for pile-driving, cranes, dealing out cables, and for ordinary hoists. In whatever position the hoist is raised, and it can be effectually worked by hand, it remains, being a self-acting clutch, and so keeping the cage or rope in a firm position until by the reverse action it descends. The same firm also show a good specimen of the weighing machine so well known to coalowners and colliers by the name of "Billy Fairplay." HATHORN, DAVY, and Co., of the San Foundry, Leeds, so well known for their compound differential pumping-engines and hydraulic pumping machinery, show some of their appliances complete for pumping both by steam and hydraulic power, or by both combined. The latter is said to be a most economical mode of pumping, more particularly for mines, requiring but a small consumption of fuel. Of course, it is well adapted for other purposes, and appears to be a most useful piece of work. The same firm have also a patent water-meter in the exhibition, which appears to be superior to those now in use, patent pulley blocks of great power, and lifting apparatus of peculiar construction, so that the weight can be left for a time when it has been raised. JOHN FOWLER and Co., the well-known engineers and implement makers, of Leeds, show several of their well-known specialties, including ploughing and traction engines, road locomotives, plough, cultivator, &c., all well finished, and worthy of the high reputation the company have long held as about the first agricultural engineers either at home or abroad. There are several brick-making machines, and among the exhibitors in this department is Mr. R. SCHOLEFIELD, of Leeds, who not only shows one of the latest machines, but a new drying shed. By this process the moist bricks are placed in iron wagons, and raised to the shed, which is heated by the exhaust steam from the engine, so that by this economical process the bricks are well dried in the course of a comparatively short time. A most interesting and at the same time important exhibit is that shown by Messrs. THWAITES BROTHERS, of Bradford, known as Shone's pneumatic sewage injector, intended for the quick and economical discharge of sewage from towns to a distance without polluting streams in its transit. The work is done by a central air-compressing engine, by which any number of ejectors can be worked, although distributed over a wide area, and at some distance from the engine. By the action of the apparatus and its peculiar construction, and an adoption of an elastic frictionless air piston in lieu of solid pistons and rams, numerous pumping stations are avoided, and as the power generated at one point can be applied to several remote points, the air machinery is in every way more economical than steam-power, as usually applied for such purposes. The ejector in the exhibition makes intermittent discharges about every two minutes, forcing out something like 200 gallons at every stroke. The air-compressing engine appears to have been specially made for the injector. The Kirkstall Forge Company show some fine specimens of patent straightened iron bars, iron axes, and iron cut and twisted into knots. GREEN and SON have several of their lawn mowers, engines and boilers, steam road rollers, &c., while there are several of the noiseless gas engines that of late have been in such request where a

small amount of power only is required. The exhibition altogether is a most excellent one, and we congratulate our engineers and machinists on the spirit they have shown in taking new inventions to agricultural exhibitions, and so making them more generally known than otherwise would be the case.

OUR SALT MINES.

Our production of salt is now seriously threatened, as was declared would be the case some 40 or 50 years ago, owing to the land-slips that have long been going on, and it is evident that if the mines continue to be worked as vigorously as they now are the time is not very far distant when Northwich, or the greater part of it, will find a grave in the River Weaver, over whose placid waters now pass upwards of one million tons of salt annually. It is not, however, so much the actual mines as the brine springs that are likely to be the sources of earliest danger—for, owing to the removal of such vast quantities of salt, the space left is at once filled by the superincumbent soil, which, falling below the level of the river, is at once covered with water. In several parts of the salt districts the ground looks as if it had been subjected to an earthquake, so broken and cracked is it. The subsidence of the town of Northwich has been handed down for generations, the earliest recorded sinking having taken place so far back as 1533, and since then there have been several others, whilst the same movement is still going on. The town is only 20 ft. above the sea level, and the thickness of the salt 180 ft.; whilst Winsford is 40 ft. above the sea, and the salt 210 ft. in thickness. Owing to these continual sinkings the most serious apprehensions are entertained, and the Government Inspector of Mines, Mr. DICKINSON, remarks "it is evident from the surface level being at a considerably less elevation above the sea level than the thickness of rock-salt underneath the subsidence now so actively begun in Northwich and Winsford may end in the whole of this portion of Cheshire being submerged." This state of things is anything but pleasant to the population of Northwich, although they may be said to have become used to it; but familiarity with danger does not always allay one's fears as to its probable consequences—so no person can feel surprised to find that a short time since a deputation representing property owners and the Local Board of Northwich and Winsford waited upon Mr. SLATER-BOOTH, President of the Board of Trade, respecting the abstraction of brine from underneath the surface of the ground for the manufacture of salt. It was stated by the deputation that upwards of one million and a-half tons of salt were produced every year from the brine in the two districts named, and in consequence great damage was done to railways, canals, houses, and every class of building, and that there was also frequent loss of life. There was a constant subsidence of county roads, bridges, &c., of from 2 ft. to 3 ft. a year—so that houses were cracking and falling in every direction, and the deputation believed that if something was not done in 15 years the towns would be under water.

This statement and belief is in no way exaggerated, for they are fully borne out by the engineers and others who have visited the places. Near Marston Hall, on the estate of Lord DELAMER, two miles from the nearest brine shaft, an immense hole not so long since crowned in. It was at one time a small pond, but in 1863 the water disappeared, when the bottom went down vertically. Water, however, again came, but in 1870 it once more went off, leaving a hole about 200 yards in circumference. That part of the London and North-Western Railway that crosses over some brine springs has gone down many feet. On the Crewe and Stockport line there are sinkings to the extent of nearly 2½ miles to the northward of the former, whilst at Crewe Hall there is a mere stanked up so as to form an area of about 75 acres, and when the tank is opened the water will not run, as there is a deep oval hole where it remains. The brine springs, we may state, are more prolific than the rock-salt mines, one of the works being able to produce at the rate of 1000 tons a week, and it has been estimated that every pint of the brine is capable of producing something like 6 ozs. of salt. The springs are, doubtless, formed by a considerable body of fresh water permeating a vast bed of rock salt, and so being saturated with it and rising to the surface. The springs have been worked for hundreds of years, and are mentioned in the Domesday Book, whilst CAMDEN says there was a sort of brine well in this neighbourhood with a stair above it, down which half-naked men went to draw the brine in leathern buckets, and then carried it into the "wich houses." At that time it appears that in all places where brine springs were found they were called "wich," as is seen in the name "Droitwich," so well known for its springs containing salt. Then there is Nantwich, where there were salt houses in the first EDWARD'S time, and so also was Middlewich, where men on foot from another hundred buying salt paid twopence for eight men's loads, and those of the same hundred one penny for the same quantity. From these particulars and the action necessary it is evident that the flow of the Cheshire brine springs are likely to be checked, so as to prevent the destruction of a vast amount of property, as well as to prevent loss of life, for several persons have been killed by the subsidence of the land. Some of the holes made by shafts falling in have been as large as 450 yards in circumference, and one of those that fell in in 1838 carried with it the engine-house, banksmen's house, stables, and carpenter's shop, with 12 men, of whom seven lost their lives.

The rock-salt mines, of course, are different, and are worked similar to other mineral, blasting being resorted to without danger, although gas was at one time met with in a singular manner. The floor it was believed was hollow after a certain distance, and to test this a man with a hammer and chisel set to work and broke into it, when from the hole made gas issued out in large quantities, and this igniting shot up in flame a distance of about 16 ft. in height. The discovery of rock-salt in Cheshire is said to have been of comparatively recent date, being less than 200 years old, and was found whilst men were boring for coal. There are two beds of salt, the lower being the best; but between it and the upper one, which varies from 60 ft. to 90 ft. in thickness, are layers of marl and clay, to the thickness of about 120 feet. The salt lies in a direction from north-east to south-west, and thence off from the sea, whilst it is rather singular that no organic remains have been found in the overlying strata or even in the fossil salt. As to temperature in the rock-salt mines of Cheshire, at depths between 110 and 150 yards, it varies from 48° to 55° Fahr. with the dry bulb thermometer, and between 44° and 53° with the wet bulb.

With respect to domestic salt the finest or lump salt is prepared by very quick boiling, and after passing into wooden troughs with perforated bottoms, out of which the brine escapes, it is taken to the stoving-room, and being thoroughly dry it is fit for immediate use. The commoner qualities are made by a slower process of boiling, whilst fishery salt is made in a still slower manner. Both brine and rock salt have certain impurities mixed with them. In the former there is carbonate of lime, oxide of iron, and other ingredients, which adhere with great tenacity to the pans, and have to be cut off with picks or chisels. Rock-salt is composed of crystals of chloride of sodium or common salt, with clay, oxide of iron, traces of sulphate of lime, and magnesia. The salt deposits are considered to owe their origin entirely to the elevation of the mountain chains with which they are connected, during which small valleys and ravines would be cut off from connection with the sea by ridges of land, and would form salt lakes and lagoons. In having so far noticed salt mining in Cheshire we shall look forward with interest to the steps that will be taken to avert the great danger with which Northwich and Winsford are threatened, and whether the application for a commission of enquiry will be granted. In replying to the deputation Mr. BOOTH stated that the application was both interesting and important, and he supposed there was no parallel to it in the kingdom. This can scarcely be said to be the case, for there are some districts where the subsidence of the land from brine springs has long been going on.

Between Bromsgrove and Worcester, at the small town of Droitwich, for ages the brine has been boiled for the salt, and, with Stoke Prior adjoining, produces about 240,000 tons a year, and at some places considerable damage has been done to property, as in Cheshire. At Droitwich we are told on high authority that the town, railway, and neighbourhood are rapidly going down. The brine pits and

boiling houses are in the town, and towards them one main run comes from about a mile on the south-east, and another from about two miles north-west. The one from the south-east comes from St. Peter's, where it has torn up the ground, and on its way to the pit crosses Queen-street and other parts of the town, where the houses are shattered and sunk. The other main run comes from what is known as Brines Pit Farm, where active solution is going on near the farmhouse, further south on the turnpike road. On its way to Droitwich it did so much damage near to Dodderhill Church that the rectory was so injured that it had to be abandoned. It is also stated by Mr. ROBERTS in his work on the rocks of Worcestershire, in describing the south-eastern run, that about the year 1860 the ground cracked along the axial line of the hill south-east of the town so suddenly that sheep feeding in a field disappeared, and had to be hauled up from a considerable depth. This extended some distance, and showed its course by cracking the outer wall of a residence there. Mr. DICKINSON also states from his own observation, as being quite clear that in those districts where landslips are now in active operation the natural springs have all, or nearly all, been stopped by the pumping, and the level which the springs take is gradually being lowered. Also at some places, for two or three miles in width, undulations of the surface may be seen, apparently caused by the solution of rock salt in ancient times, and there are mounds and mounds where the drainage has been thereby interrupted by the sinking. Rock salt, it may be said, has been worked in Worcestershire, being found at Droitwich at a depth of about 70 yards. The question of the damage done to property by salt mining it will be seen is a most important one, and must be taken into serious consideration before long. As time goes on the danger will increase, and the greatest difficulty will undoubtedly be experienced in averting it, short of closing entirely some of the works, for the one and a half million of tons of salt extracted annually in Cheshire was equal to the excavation of 950,000 cubic yards of solid earth.

CHEAP PRODUCTION, AND NATIONAL PROSPECTS.

At the half-yearly meeting of the Manchester, Sheffield, and Lincolnshire Railway Company, held a few days since at Manchester, the Chairman, Sir E. W. WATKIN, M.P., had a rather difficult task to perform. There can be no question that as a railway chairman he stands almost, if not altogether, unrivalled. He has eloquence of a ready if not a very exalted order. He can introduce a happy joke into a mass of dry figures with very good effect; and his life-long familiarity with railway working and railway politics make him an undoubted authority on railway affairs. Yet, as we have just observed, Sir E. WATKIN had a difficult task to perform a few days since at Manchester. He had to explain why a scanty ordinary stock dividend became still scantier; he had to admit still failing receipts; he had to acknowledge great depression in the railway interest all over the North of England. The position of Sir E. WATKIN on this trying occasion reminds us, indeed, of the lot of that remarkable old man of our nursery days who invoked music as an antidote for the cravings of hunger:—

"There was an old man, who had an old cow,
And had no supper to give her,
So he pulled out his fiddle,
And played her a tune—
"Consider old cow, consider!"

Driven to his last line of defence, Sir E. WATKIN asked his Manchester, Sheffield, and Lincolnshire constituency to "consider" that the real question was whether the country was going to ruin for good and all, or whether it would recover itself. Of course, Sir EDWARD expressed his confidence that it would recover; and so he dismissed his submissive stockholders with, at any rate, a crumb of comfort, which, perhaps, induced some of them to regard their scanty dividend as a little less scanty than it really was.

Now, if Sir E. WATKIN is to prove a true prophet, and if the country is really to recover itself, what is the first object which must be aimed at by our ironmasters and our manufacturers generally? It is all very well for Sir E. WATKIN to follow the example of the Prince of Wales at Grimsby, and to indulge in vague generalities about the probability of a speedy revival in the trade of the country. But unfortunately this world's affairs are not regulated by generalities. Great economic laws control the world's commerce, and these laws cannot be disregarded with impunity. If we are to retain the lion's share of the world's production and the world's commerce we must accustom ourselves to produce cheaply and to carry cheaply. We must not rely on protection, as such a system really has a tendency to enervate the industry which it professes to foster; but we must place our dependence rather upon a robust cheap production, which will, at any rate, enable us to pour our products upon unprotected markets, and possibly to invade even those which hostile legislatures would fain close against us. It is easy to talk about such a policy as this, but it is another thing to carry it out successfully; and in any case it can only be successfully realised with a thoroughly harmonious co-operation on the part of labour and capital. In destroying or impairing the power of the country to produce cheaply the trades unions have weakened the ability of the country to produce at all. We fancy, however, that some of the demagogues of the working classes are beginning to see that the dangerous game of playing at strikes has been carried too far, and that their constituents must for the time being assume a docile attitude. On almost all sides we have instances of a decline in the price of labour, as lower wages are being accepted without opposition. There is, then, a chance that the anticipations of Sir E. WATKIN of a revival in the industrial and commercial fortunes of the country will be realised. We trust most sincerely that this may be the case, but still we cannot shut our eyes to the fact that mere sentimentality will not prove sufficient to ensure a return of even partial national prosperity.

THE ANGLO-FRENCH VIADUCT.

Although in consequence of the improvement of harbours, both on the English and French coasts, and of the faster and more commodious boats in use, the crossing of the Channel is a very different undertaking to what it was half-a-century ago, there are still many who regard the trip of 85 minutes from Dover to Calais as something so alarming that they prefer to forego the pleasure of a visit to the Continent rather than risk the "dangers and miseries" of the sea. That sea sickness is pleasurable cannot be pretended; but, as a rule, it is marvellously purifying, and thus conducive to health, so that it is not an unmixed evil. Taking advantage, however, of the dread of the sea which is felt by many, almost innumerable projects have from time to time been brought forward to secure unbroken railway communication between England and France, the most recent proposition being that of Mr. Verard de Sainte Anne for a substantial masonry viaduct connecting Cape Grizaz on the French coast with Folkestone. Opinions have been about equally divided as to the preference to be given to a tunnel or a bridge; and although it has been demonstrated that in order to permit those concerned to earn 2½ per cent. per annum interest upon the expenditure necessary for mere construction, it would be necessary for every man, woman, and child in the United Kingdom to make one double journey in each week to pay what the projectors name as the maximum fare that could be charged, there are still some who are disposed to give their countenance to either a subterranean or aerial line, provided only the water be avoided.

Whether Mr. Verard de Sainte Anne is a professional engineer is not stated, but projects of this class reflect more credit upon amateurs than upon those who have studied the subject, as the latter would naturally be expected to have some acquaintance with the strength of materials, the forces to be overcome, and such like, whilst the amateur cannot reasonably be supposed to be hampered by any such absurd considerations. The preliminary operations of the tunnel schemes are regarded by Mr. Verard as having shown, if not the impossibility, at least the great difficulty of constructing the tunnel, but he maintains that even if the trial works for the tunnel had proved successful his scheme is superior, since with the tunnel everything is vague and uncertain, whilst with the viaduct "all the difficulties are foreseen and provided for, there being nothing in his scheme the feasibility of which has not been proved

beyond possibility of contention by having been already executed." He states that his viaduct could be constructed for 12,000,000, whilst the tunnel would cost 20,000,000, but it must be recollected that the estimate that 2½ per cent. per annum would be earned if the entire population of Great Britain made a weekly trip to the Continent was based upon the assumption of the cost being but 6,000,000, to 8,000,000.

The old Varne Rock is made the half-way house by Mr. Verard, as it was by Mr. Boutet and others, and it is said that according to the Admiralty soundings the greatest depth of the water to be found on the passage is 55 metres; the piers are to rise 35 metres above the surface of the water in order not to interfere with the navigation, and the greatest span is to be 200 metres. To enable those unaccustomed to these measures to appreciate the solidity of the proposed structure, and the ease with which it may be constructed, it will suffice to say that it will be equivalent to building a series of Eddystone lighthouses under water, and in the most awkward part of the channel; placing upon these a series of constructions like the Monument at London, and then connecting the tops of the latter by Menai bridges. The comfort of passing along a girder 650 feet long in a railway train at a height of 300 feet from the foundation (or, roughly speaking, at a height of six ordinary church steeples mounted one on the other) can be better imagined than described. Mr. Verard proposes to adopt the pierres perdues system for getting his foundations, for which he would require, if no accident occurred, a cube of stone about 4 miles square on every face, the mere removal of which would certainly give some employment, if it did nothing else. Mr. Verard only asks for 40,000,000 to pay his preliminary expenses, and no doubt by the time this is expended those who may provide it may be more enlightened as to the prospects of utility and remuneration. In the meantime it may be stated that the projectors intend to visit this country to lay the matter before the Government and the scientific societies, by the latter of whom it will no doubt be fully discussed, when an opportunity will be afforded for referring more fully to the details of the enterprise.

CHEAP COAL FOR THE METROPOLIS.—There is probably no class of business in which a radical reform is more necessary than in the supply of coal to the Metropolis, for, owing to the general prevalence of the credit system, it is practically impossible to purchase coals at a fair price, especially in the suburbs of London, even when the purchaser is prepared to pay cash on delivery. The coalowners are content to leave matters with regard to the Metropolis in the hands of their London agents, and these are too intimately associated with the retail dealers accustomed to give credit to the consumer, that they are disinclined to run the risk of interfering with the retailers' business by supplying the consumer direct, as he would in London proper. About Kingston-on-Thames, Croydon, Bexley, Tottenham, Hornsey, and innumerable other suburbs the hardship is much felt by ready-money purchasers, who are compelled to pay the credit prices to save the honour of the retail dealers. If an association of coalowners or wholesale coaldealers were to undertake to supply the suburbs of London with good coal at cash prices, without agents' profits, the amount of business they would do would be enormous; and, as the entire trade would be done for ready cash, there would be absolutely no risk of loss, so that very ample dividends would be obtained on the necessary amount of working capital. If any move is to be made in the matter it should be made at once, as by that means the whole profits of the purchases now about to be made for the coming winter will be secured to the company.

AMERICAN RAILWAYS.—Unlimited competition appears to be the rock upon which has split the bulk of the American railway enterprise which has sought capital in this country. Witness the Erie, Grand Trunk, Great Western of Canada, &c., and very many others. These great main lines in America do not appear to assimilate in point of prosperity to the main lines in this country in regard to branch lines connecting with them. Here the shareholders have always been complaining that the main lines were being ruined by unremunerative branches; in the United States, on the contrary, the branch lines are most remunerative. Here a good district "makes a railway," there a good railway makes a district. An agreement is now spoken of as likely to be brought about by Mr. Childers, the president of the Great Western of Canada, and Sir Henry Tyler, the president of the Grand Trunk, to put an end to the suicidal policy of active competition between those two companies, and it is to be hoped the efforts made by Sir Henry Tyler and Mr. Childers may be crowned with success, for there is a very large amount of capital lying unproductive in these securities held in the United Kingdom. As in the Eastern States excessive competition is the cry, so in the Western States monopoly is the complaint; one by one the branch lines feeding the Central Pacific Railway have been "gobbled" by that great trunk line. These branches have all been highly remunerative to the promoters and shareholders, and the Central Pacific Company has had to pay high prices to own them, but in the end no doubt it will pay them well to carry out their policy of "control and monopoly." In Utah and Nevada main lines have been commenced, and are in operation for a few hundred miles, and from these lines numerous branches have been constructed to connect with them as they have stretched forward in their north to south course from the great east and west Pacific lines. These branch lines have commanded considerable attention of late years. They are built chiefly on the metre gauge system, and are very cheaply constructed and worked. It is not uncommon for ordinary shareholders to receive dividends as high as 17 per cent. earned by these lines. In our number of August 2nd we published the advertisement of the Central Pacific Coal and Coke Company (Limited), inviting subscriptions for 8 per cent. debenture bonds, the proceeds to be devoted to the construction of a branch line to connect the great San Pete Valley coal fields and coking works with the Utah Southern Railway, one of the main lines above referred to, diverging at right angles from the great Pacific lines. This is another of the monopolies referred to. This line will have the sole control of the traffic—agricultural and mineral—of this valley for a distance of about 40 miles, and for once an English company appears to have got hold of one of the "plums" which more usually fall to the share of "native" investors. We have already called attention to the discovery of the great coal field which forms one of the principal sources of traffic of this line. This appears also to be a monopoly in regard to the supply of fuel. We trust Sir Henry Tyler will bring about the fusion of the Grand Trunk and Great Western of Canada, and we also trust his great experience and good management will show English investors in the San Pete Valley railway bonds that well selected American railway investments are second to none for safety and remunerative results.

GOLD MINING IN VICTORIA.—We have been favoured by Major Thomas Couchman (the Secretary for Mines) with the usual returns of the mining surveyors and registrars for the quarter ended March. There were 36,598 miners employed during the quarter; of these 12,930 Europeans and 9333 Chinese were employed in alluvial mining, and 14,189 Europeans and 146 Chinese in quartz mining. In alluvial mining 235 steam-engines, of 6284-horse power in the aggregate, were employed, and there were 12 boring machines. In quartz mining 799 steam-engines, of 16,423-horse power in the aggregate, were used, and there were seven boring machines. The approximate value of the mining plant was 1,920,505. The number of square miles of auriferous ground actually worked upon was 122½, and there were 3406 distinct quartz reefs actually proved to be auriferous. During the quarter reported upon 170,550 ozs. 9 dwts. of gold was obtained, of which 68,632 ozs. 12 dwts. was from alluvial and 101,917 ozs. 17 dwts. from quartz mining. The average got was about 6½ ds. per man per month. The 186,633 tons of quartz crushed yielded at the rate of 8 dwts. 8-39 grs. per ton; the 11,210 tons of quartz tailings and mullock treated averaged 1 dwt. 10-16 grs. per ton; and the 1013½ tons of pyrites and blanketing operated upon yielded at the rate of 2 ozs. 19 dwts. 14-07 grs. per ton. The report of Major Couchman for the year upon the operations of the Mines Regulation Statutes is very satisfactory. During the past year a remarkable reduction has occurred in the number of accidents,

even when due allowance is made for the decrease in the number of miners employed. As compared with 1874 (the first in which the statute came into operation) the accidents have fallen off from 296 to 121. These 121 accidents occurred amongst 37,212 miners, and resulted in 40 killed and 106 injured. In alluvial mining 14 persons were killed and 26 lost their lives in quartz mining. Reference is made to Capt. Wagemann's new camphorated explosive compound, which is a preparation of nitroglycerine and gun-cotton; it is of a tenacious gelatinous consistency, brown colour, and emits strongly the odour of camphor. It is claimed to have 25 per cent. more power by weight than dynamite, but this percentage of superiority is not proved; that it is not exploded by firing a charge in close proximity, and that it is not affected by immersion in water.

DECREASE OF LABOUR IN COAL MINES.—There has been a steady decrease in the number of hands employed in collieries not only in Great Britain but in Belgium. Up to 1875 our mining population rapidly increased, and particularly in Lancashire, but since that year the reverse process has gone on, and the colliery population has decreased at the rate of 12 per cent. Lancashire has suffered during the ebbing of the tide just as she gained previously, though the singular part of it is that though the mining population has decreased so much the output of coal per head has increased. The same thing has happened in the Province of Liège, where 800 colliers less were employed in 1878 than in the previous year, though the rate of production was nearly 200,000 tons more. It proves, at all events, that depressed times have their advantages as well as disadvantages, and among others that a good deal more work is turned out per head.

COAL AND IRON IN THE UNITED STATES.—The New York coal trade has continued extremely quiet. The retail dealers of New York appear to prefer waiting to see what turn affairs will take before buying at the advanced rates current. The amount of coal coming forward is still very large. Thus the aggregate extraction of anthracite and bituminous coal in Pennsylvania to July 12 this year amounted to 14,994,733 tons, as compared with 8,783,941 tons in the corresponding period of 1878, showing an increase of 6,110,792 tons this year. The demand for pig-iron has continued good at New York, and has, indeed, been almost unprecedented when account is taken of the season. A sale of 7000 tons of steel rails is reported at New York with delivery in the winter; the contract price in this affair is \$45½ per ton at tide-water. There is little change to report in the general condition of the Philadelphia market for steel rails; the demand has continued good, but sales have been limited on account of the large orders now on hand. Sales to the extent of 15,000 tons to 20,000 tons have been made by Eastern mills; these sales have been effected principally for winter and spring delivery. As regards iron rails, the Pennsylvania mills are full of orders for the next three months.

THE MAMMOTH COPPEROPOLIS COMPANY OF UTAH.—In the Supreme Court of Judicature on Aug. 4, there was an appeal from a decision of Vice-Chancellor Hall sanctioning a scheme proposed by the company under the Companies Arrangement Act, 1870, by which the trustees were authorised to take steps for the development of the property on which the debentures were secured to a new company, and under which the debenture-holders were to exchange their securities for debentures of the new company. The ground of the appeal, which was brought by one of the debenture-holders, was that this case was not within the provisions of the Act of 1870, by reason of this—that the class of creditors were persons who were debenture-holders of the company, having also a security for their debentures of certain property which belonged to the company and was vested in trustees for securing the debenture-holders, and that the equity of redemption of the property upon which the security was created had been transferred to another company. It was therefore said they were not creditors secured upon property of the company within the meaning of the Act of 1870, because the property on which the security existed had passed to some one else.—Mr. Latham appeared in support of the appeal; Mr. Mulligan opposed; Mr. Northmore Lawrence appeared for the official liquidator.—Their Lordships were of opinion that the scheme was within the provisions of the Act of 1870, and that the details having been sanctioned by an overwhelming majority of the shareholders and debenture-holders as being manifestly for their advantage, the Court would decline to interfere. The appeal was, therefore, dismissed and the decision of the Vice-Chancellor confirmed.

REPORT FROM CORNWALL.

Aug. 7.—Holiday time is not conducive to business activity, and the present week has again been no exception to the rule. There must be a material change somewhere ere there is any marked advance manifest, and the worst feature of the present is that so much time is passing without improvement, which ought to have been favourable. It is the same all over the West of England. We have embraced the opportunity during the past few days of a run through the metallurgical districts of North Devon and Somerset; and whether on Exmoor, the Mendips, or elsewhere we find the same (and, indeed, in proportion a far greater) amount of dulness and deadness, and, indeed, an enormous quantity of valuable mineral property lying waste and unproductive. However, the change must come some day.

We are glad to be able to report an exceedingly satisfactory result of the bazaar and fete held at Tehidy, on Monday, on behalf of the funds of the Miners' Association of Cornwall and Devon, which in the course of years of useful work, carried on with inadequate support, and in spite of many difficulties and obstacles, had accumulated a debt of 2000. The arrangements for the fete were excellent, and thoroughly appropriate, and the weather being fine this proved the chief attraction of the Bank Holiday to the dwellers in West Cornwall. It is to be hoped that now the society will be enabled to make a fresh start and extend its operations, that it will be adequately supported, and not be again allowed to fall into difficulties. If Cornwall is to continue to hold its own—as we believe it will—it can be only by the use of the best skill and by the diffusion of the best scientific knowledge, such as it is the plan of this society to supply.

The Central Relief Committee appointed to deal with the mining distress of Cornwall have held their last meeting for the season, and presented a summary of their work. So far as emigration is concerned, a fund was raised by the contribution of 5000, each for the Central and Wesleyan Relief Committees. Out of this 8761, 16s. 8d. has been expended, chiefly in emigration to Canada, which costs about 25s. per family. Twenty-nine families, consisting of 156 persons, were sent to Canada; and six wives and families—22 persons—to the United States. One family of four persons were helped to go to Ireland, and a wife and three children assisted to join the husband in the Isle of Man. Altogether, therefore, 192 persons were helped to leave the county—37 from the Penzance district, 33 from the Helston, 55 from Redruth, and 67 from the Truro district. The work of the local committee was spoken of very highly; and as to the general operations, the Chairman (Mr. Pendarres) stated: The total subscriptions now amounted to 38600, 12s. 11d., but 2000 of this had not been received, though he had no doubt it would shortly. The general purposes voted had been—To Penzance, 1971; Helston, 4000; Redruth, 2000; Truro, 3500; Launceston, 250; and Newlyn East, 150, making a total of 11571. This money had been distributed by the local committees in the various places, and had been given away in various ways and not in money. The local purposes voted for were:—To Penzance, 600; to Camborne for the purpose of making a new road, which had been done. The vote was supposed to have been 500 (3½ per cent. on the total outlay), but some thing was struck out, and the grant reduced to 600. Helston for a somewhat similar purpose had had 2000. As a subsidy for opening up the Helston Quarries 1500 was voted (6d. a day to each man employed), but only 82s. 4d. of this had been expended. The sum of 6d. a day was granted for the same terms to Perran, but of the 1800, voted only 500 had been spent. Then there were certain miscellaneous items amounting to 161 14s. 9d. There was now a balance at the bank (including the advance from the Emigration

Fund) of 1936l. 9s. 6d. He might say that the two Emigration Committees worked together most harmoniously. The Wesleyan Committee included some excellent men of business, and the information they afforded was very valuable. The sum of 880l. had been sent to the Relief Fund by Cornish persons in Australia, and he thought the committee should pass a resolution recognising the liberality displayed, and the kind feelings which prompted the donors to send home money for their brethren in Cornwall. The Rev. E. M. Pridmore added his testimony to the excellent results produced by opening the Helston Quarries, and on the motion it was decided that the unexpended balance of the Helston grant should be applied towards making a new road to Porthleven.

Altogether, the committee may be congratulated on having done much good useful work with comparatively small means.

TRADE OF THE TYNE AND WEAR.

August 6.—Most of the collieries in Northumberland and Durham are kept regularly going. The best steam coal and best gas coal works are in the best position at present, as they are well employed, and have some advantage also in the price they receive. The demand for second-class steam coal and for coke continues rather weak. On the whole, considering the state of commerce in the country generally, the fuel trade here may be considered to be in a tolerably good state. Rumours have been afloat that some intention has been entertained of re-opening some of the works closed within the last few years, but this is not likely to be done at present. The demand must be increased considerably and better prices realised to warrant such a movement. Only the revival of the iron trade and of trade generally appear to be likely to bring about such a result. The inland demand for house and manufacturing coal remains weak. Cargoes of coal continue to be taken out to America occasionally, but owing to the import duties there most owners prefer to send their ships out in ballast. With respect to profits coal is certainly shipped at low rates, and only those works most favourably situated can make a fair profit, while those in the worst position can barely make ends meet. Some gas coals are put on board at Tyne Dock at 5s. per ton, and when this sum is added to the freight to the most important ports it is evident that only a glut of coal in the markets could prevent a large demand here. There is a good supply of vessels of all kinds, both sailing vessels and steamers, and freights are extremely low, as these quotations show. Steamers are taking coals to London at 3s. 10d. per ton, to Hamburg at 4s. 7d. per ton, and to Galatz at 12s. per ton. Sailing vessels are taking coals to Carthage at 8s. 6s. per keel, &c.; St. Petersburg, 9s. 12s. 6s. per keel, &c. The new company which has been formed to work the coal at Evenwood and the iron mines at Stapewath is to be called the Evenwood Coal and Ironstone Company (Limited). It is intended to acquire the mines recently worked by Messrs. Charlton. The capital of the company will be 165,000l., divided into 16,500 shares of 10l. each.

In Durham the award of the umpire in the late arbitration case has been received with satisfaction; the men, on the whole, indeed, have reason to be well satisfied with the result, as the union is established on a firm basis, and as the wages are arranged in accordance with the county average. The 10 per cent. reduction only really has been made in reference to that average, and in many cases, when the wages were below the county average the rates have been raised very considerably. In this respect the men have, of course, reaped considerable advantage from the late dispute.

The North of England Institute of Mining and Mechanical Engineers annual meeting was held on Saturday in the Wood Memorial Hall, Newcastle, Mr. G. C. Greenwell, the President, in the chair. The annual report of the society showed that the receipts are slightly in excess of last year, and, the expenditure having been limited, the balance at the bankers had increased. The proceedings during the year had reached their usual high standard of excellence. The report having been adopted, the following papers were then read:—"On a New Method of Rope Haulage" by Mr. James Pease, West Cumbria Colliery, Staffordshire; "Some Remarks on Endless Rope Haulage," by Mr. W. Jackson; "Introductory Notes on Boiler Accidents," illustrated with models and drawings, by Mr. D. P. Morrison, Newcastle; and "On Fuel," particularly brown coal in its formation and as an article of commerce, by Mr. J. A. Ramsay. In the latter paper it was stated that brown coal, a member of the same family as coal, came into notice only some two or three centuries ago, and has received less attention; but now year by year it is making its influence felt as one of the great wealth producers of civilised nations. Peat, the third and last in the order of fossil fuels, combines a present growth upon the fermented remains of a vegetation of preceding ages, and has long been known for domestic use; but its value as a heat producer for industrial purposes has not until recent years received the attention it deserves. It is now becoming an acknowledged factor, not only as a steam generator, but as a great and pure light giver. Geologically brown coal belongs to a period far subsequent to the carboniferous formation. The name is given to the fossil accumulation of more or less carbonised vegetable remains, and it is found most abundantly in the tertiary formation, and as a rule it improves in quality from the upper to the lower beds. It is found in several parts of the United Kingdom; but the only place at which it is worked is at Bovey Tracey, in Devonshire. On the continent of Europe it is found in extensive tracts in almost every state and province, and is extensively worked in many of them, the produce finding a market on the same ground with the coal from Westphalia, Silesia, Saxony, and England. Peat, owing to its great bulk in its natural state, is rarely used for industrial purposes; but, after being subjected to an exceedingly high pressure, and formed into blocks it becomes as a fuel superior to most of the brown coals, and a powerful rival to coal of the carboniferous period. The West of England Compressed Peat Company are now making a fuel from the peat found on Dartmoor, and from the opinions of scientific men and others their produce is something extraordinary. The engineers of the Belfast and North of Ireland Railway of Ireland state as the result of experimental trials that 21 lbs. of peat raised steam for a mile of running, while it took 26 lbs. of coal to do the same work. It has also been tried on the North of London Railway and Thames Steamboats, and Mr. J. R. Scott, Registrar of the London Coal Exchange, says the results were of a most satisfactory character, and from the speed attained and the absence of all smoke he is satisfied that eventually peat may be expected to be a substitute for coal in all its uses, while its great heating power and absence from sulphur and smoke will eventually make it favourably known to housekeepers.

Dr. Letheby says that illuminating gas manufactured from it is free from sulphur, and 1 ton will produce 14,000 cubic feet. Experiments made at the Commercial Gasworks, London, gave 11,000 cubic feet of gas from 1 ton of peat, with an illuminating power of 224 sperm candles.

For uniformity, extent, and quality the brown coal deposit of North-west Bohemia is the most valuable on the continent of Europe. It has obtained an important position during the last 15 years, and in an almost incredible short space of time the output of brown coal from this district has increased from a few hundred thousand tons per annum to over 14,000,000 tons per annum. The trade and the competition it is carrying on with the coal trade of Westphalia and the North of England will be treated of in a continuation of the present paper.

The scrutineers gave the following as the results of the voting in the election of officers for the ensuing year:—President, Mr. G. C. Greenwell (re-elected); Vice-Presidents, Mr. I. L. Bell, M.P., Mr. William Cochrane, Mr. G. B. Forster, Mr. John Marley, Mr. A. L. Stevenson, and Mr. J. B. Simpson.

There was not so good an attendance at the iron market at Middlesbrough on Tuesday, and there was an absence of the animation noticeable last week. Nevertheless the makers were very firm as a rule, and the quotations are about the same as last week—No. 1, 36s. 6d.; No. 3, 33s.; No. 4, 32s. net. The stock returns issued on Tuesday show an increase for July of 10,439 tons—about equally divided between the holdings of makers and those in stores. Whilst this was recognised as to some extent a source of

weakness, the better tone at the close of the market reported from Glasgow gave increased encouragement. The shipments of iron have improved chiefly for the Baltic and the French and Belgian ports. Germany has been taking but little iron compared with a few months, but there is not, notwithstanding the duty, evidences of an increase likely to arise in the demand for the German trade. There has also been an improvement in the deliveries for Scotland which amounted to about 5000 tons. The quantity is, however, below the average. About 19,000 tons have been shipped from the Tees ports for the week together. The steel rail trade is busy, and more enquiries have lately been reported. The enquiries for such steel as is manufactured in the district leads to the belief that full work will be found for the works and extensions which are in progress. Nothing has yet been done in the way of settling the wages question in the finished iron trade. The prices of manufactured iron have been pretty steady. Ship-plates are on the average 5l. to 5l. 2s. 6d.; common bars, 4l. 15s. to 4l. 17s. 6d.; angles, 4l. 17s. 6d., less 2½ per cent.

The Britannia Works at Middlesbrough have just been closed. The founders, taken as a whole, are turning out a good deal of work, and taken altogether the amount they are doing is satisfactory, although prices are low. The returns of the Cleveland ironmasters were issued on Tuesday. They show a total make of iron of 150,521 tons, as against 129,853 tons in June, a difference of 20,668 tons. The shipments were 29,707 tons to foreign ports, and 34,562 tons coastwise. The deliveries were nearly 17,000 tons less than in the corresponding month of 1878. Makers' stocks increased upon June 4723 tons, increase in public stores 931 tons, increase in stock in makers' stores 4785 tons. The total increase of stocks was 10,439 tons. There were 79 furnaces in blast, as compared with 84 in June; five have been damped down.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Aug. 7.—Pig-iron is not in better request; this arises in much part from the fact that pig-iron can be bought cheaper than it can be made, therefore those manufacturers who buy their iron in the open market are often better off than those who produce pig-iron themselves. Minimum cinder pig cannot find customers at 35s. per ton, and ordinary all-mine hot-blast is being sold at from 2l. 15s. to 3l. 5s.; but less money even than this is being taken by makers who have heavy stocks on hand. Messrs. Bradley Brothers, of Bilston, have blown out their last furnace till they have reduced the stock of pigs which have accumulated on their premises. The heavy iron founders are doing scarcely anything on mill and forge work, but pipes, lamp-posts, and bridge sections find a fair amount of work for the operatives at a few leading establishments. Finished iron is in slightly better demand at a few mills and forges where the quality is of acknowledged repute, alike as to boiler plates and sheets. Marked bars are not in brisk request, yet the orthodox rate of 7l. 10s. per ton prevails, and 8l. 2s. 6d. as to Earl Dudley's iron. Minimum bars are as low as five guineas a ton. Coke plates are affording a little less work at most of the tin-plate mills, and prices are weak. Messrs. E. T. Wright and Sons, of the Monmoor Ironworks, Wolverhampton, have again secured the Government contract for sheets and plates up to a specified thickness, which at its last previous allotment went from them to Yorkshire. The contract usually runs three years. Co-operating with those of the colliery owners upon Cannock Chase who desire to secure less irregularity in the boat weights, the Birmingham Canal Company yesterday announced a new scale of tolls, which to some of the Birmingham coal merchants will be a reduction of from 2d. to 4½d. per ton.

The dispute in the Warwickshire coal trade would seem now to have come to an end, the men having been on strike against a reduction in wages since May 28. The men state that the average wage did not exceed 16s. 6d. per week for skilled and 12s. 6d. for unskilled workmen. To decide the dispute Mr. Mottram, Q.C., Judge of the Birmingham Court, was appointed as umpire; and, after having the books and accounts of the employers examined, he believes that the wages of the men have been larger than 16s. 6d. and 12s. 6d. per week respectively, and that they might have earned more money had they worked the required number of hours. His Honour awards that "there shall be a reduction of 10 per cent. in the rate of wages as paid to the men prior to May 28, and that 5 per cent. deducted between that date and the time of his award shall be retained by the masters." The employers, however, "are not to be at liberty to reduce the wages below 2s. 6d. per day." It is stated that after paying wages the masters have been working at a loss of 9d. per ton on all coals sold previous to the strike, and that the weekly earnings of the men and boys have been 1l. 0s. 4d. during the same period.

At the South Staffordshire Mines Drainage Commissioners meeting, to be held in Wolverhampton on Wednesday next, the Chairman of the Bilston district committee will move that a mines drainage rate for one year, payable in two half-yearly parts, shall be assessed upon all occupiers of mines within the Bilston district, at the rate of 1½d. upon every ton of fire-clay and limestone, 4½d. upon every ton of ironstone, and 3d. upon every ton of coal, slack, and other minerals not being fire-clay, limestone, or ironstone. And the Chairman of the Commissioners will move that a general drainage rate for the half-year ending June 30, 1879, be assessed upon all occupiers of mines within the drainage area, at the rate of 1d. upon every ton of slack, shale, limestone, ironstone, fire-clay, coal, or other minerals raised out of all mines within the drainage area; the rate to be payable on Oct. 1 next.

A NEW INVENTION BY MESSRS. EDWARDS AND SON, Wolverhampton.—The firm above mentioned is one which in its way has become unparalleled in point of extent of manufacture relating to products interesting, and at the same time desirable, for mining purposes. Commencing with but one small establishment, the business during the past few years has grown to such an extent that the proprietor is now the happy possessor of no less than four gigantic works, all situated within the borough of Wolverhampton. This, it may be remarked, has arisen from the fact that the proprietor is always endeavouring to solve the problem as to what novelty will best suit the desire of the class for which he has so long catered. His latest invention is the production of a machine for forming the eyes of pickaxes, hoes, hammers, &c. It consists in the main of a horizontal revolving shaft, driven by suitable mechanism, and is provided with a crank or equivalent at its centre, and with a cam or equivalent at each end, whilst the shaft is carried in bearings in the main standard of the machine. The crank gives motion to a vertical punch, through the medium of a link or other suitable connection, and the punch is held in a bolt guided in a frame connected to the main standard. The cams force together two horizontal dies (preferably of steel) working centrally with the punch. These dies are carried in die holders, working in suitable guides, fixed upon the bed of the machine, and each die holder is provided with a shank projecting from the back, and terminating in a box or frame upon the bed of the machine. Vertical sliding rods on pillars pass from the cams into the frame. The sliding rods have their ends cut off in a slanting direction, forming inclined planes. The back ends of the shanks are similarly cut off, except that a part of each end is left square at the end of the inclined plane. As the sliding rods are pressed upon the cams the inclined planes at the end of the rods press against the inclined planes at the end of the shanks, and thus force the dies together. The rods are pressed somewhat beyond the point at which the inclined planes pass out of contact, so that a flat on each rod may be in contact with the square end of each shank, and thus relieve the friction on the cam during the action of the punch. Instead of the inclined planes, however, equivalent mechanism may be used in connection with the rods and shanks. The cams act only in forcing down the rods, which retain the dies pressed against the iron on which the eye is being formed, while the punch is pressed down and raised again clear of the iron. When the punch is raised the rods are raised by means of an additional cam upon the revolving shaft. The bar of iron on which an eye is to be formed is placed at a high temperature between the dies, which

are then forced forward, compressing the iron and shaping part of the exterior of the eye. At about the point when the dies are completely "home" the punch is forced into the metal, thus forming the hole of the eye, and at the same time forcing some of the metal into a recess formed in the bottom of the dies to the shape of the part of the eye projecting beyond the bar. A hole is formed at the bottom of the recess to clear the end of the punch. A shield or plate at the base of the punch presses upon the top edge of the iron, and shapes it. The metal forced out of the bar in forming the hole thus forms the metal round the projecting part of the eye in the case of forming a projecting part, but when no projecting part is required the dies are made with a ledge instead of a recess to form the bottom of the eye, and some of the metal is punched out of the bar in forming the hole. Altogether the invention may be summed up as a most ingenious one—labour saving, durable, and one that must ultimately prove a fortune to the worthy inventor and patentee—Mr. Edwards. We wish him most hearty success in its general adoption.

SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE INSTITUTE OF MINING ENGINEERS.

INTERESTING DISCOVERY.

At the South Staffordshire and East Worcestershire Institute of Mining Engineers meeting on Monday, Mr. Henry Johnson presided, and there were present among others Mr. W. J. Hayward (vice-president), Mr. W. North (Mayor of Dudley), Mr. T. Latham, Mr. W. J. Davies, Mr. Jonah Davis, Mr. W. Farnworth, Mr. Addenbrooke, Mr. J. M. Fellows, Mr. Palethorpe, Mr. Turner, Mr. Wilkes, and Mr. Alex. Smith (Memb. Inst. C.E.), secretary.—Mr. Edwd. Scattergood was elected a member.—The Secretary read notes of the evidence before the Accidents in Mines Commission, and stated that the reports were strictly privileged, and could not be published.—The President suggested an excursion. He had been to see the site of the Asylum at Rubery Hill, thinking that it would be an appropriate out. (Laughter.) He did not intend the excursion in that light, but from a geological and mining point of view. (Hear, hear.) In excavating for the foundations coal had been found, and he wondered at the time whether it was the tail end of the Hawne measures or of the Warwickshire coal field. He found it to be a very poor coal, 2 ft. thick, and associated with what was called fire-clay, but which had limestone in it. An excursion to the place would, therefore, do no good, although a geologist might find an interest in the place. Upon consulting references he found that a trial shaft had been made on the estate of Mr. Attwood, the banker, at Coombe, and at a shallow depth there was found quartz like the parent hill. The quartz had been charged a little by heat and tilted up.—The Secretary reported that Mr. Steen (Wolverhampton) had expressed his willingness to attend a meeting and consider any practical suggestion as to the improvement of the colliery inspection books.—The President, referring to the subject of excursions, proposed that the Institute should visit Lord Dudley's open works at Claycroft, and then proceed through the old tunnel from Shirts Mill to Parkhead, and see the wonderful strata. The canal boring passed through the brooch coal, the thick coal, and the limestone in the distance mentioned. This trip was agreed upon. Votes of thanks were given to the President, Vice-President, Mr. T. Latham, and Mr. John Hughes for plan and pictures given to the New Mining Museum, and a vote of thanks was also given to Mr. R. Latham for a collection of bones and horns found 16 ft. below the surface at Claycroft, and pronounced by a local authority to be the remains of the reindeer. These relics were examined with much curiosity.

SOUTH STAFFORDSHIRE MILL AND FORGE MANAGERS ASSOCIATION.

IRON AND STEEL MAKING.

At the meeting last week—Mr. E. Harris (Vice-President) in the chair—a paper was read by Mr. John Lester, the late hon. sec., upon the "Rise and Progress of the Manufacture of Iron and Steel," in which he said the sorts of ore most generally used were enumerated and their natures explained. How and by what appliances the extraction and reduction of the iron from the native ore has during various periods been conducted was shown, from the time of the wind-furnace with charcoal or stone coal. The importance of producing an efficient blast, was dwelt upon, and the advance shown in the methods adopted for this purpose was traced from the time of the skin bellows worked by the foot of the blower, and the placing of the furnace in a mountain gorge to catch the wind, to the present advanced form of procuring blast by steam power. The puddling process was traced from its introduction by Henry Cort, and the Bessemer and Siemens-Martin processes were explained and compared, with considerable clearness, plans and drawings being used by Mr. Lester. At the conclusion of the paper the members discussed the various points treated of, more especially the comparisons of the two great modern systems of steel-making.—The Chairman remarked that although Bessemer had not achieved all that it was at first thought he would attain, yet the value of the Bessemer principle for steel-making could hardly be over estimated.—Mr. W. Farnworth reminded the association that it was in the Staffordshire neighbourhood that the Bessemer furnace was first worked. At that time the great metallurgist Mushet had not rendered Mr. Bessemer any assistance to prevent too great a decarbonising of the iron. Mr. Farnworth, speaking of the use of the Bessemer furnace in France, said he had seen at the Creusot works large quantities of cold pig-iron thrown into the crucible while there was molten metal in it. Mr. Lester explained that this might either be to reduce the intensity of the heat or was necessary in the preparing of a particular sort of steel.—Mr. William Edwards remarked that upwards of 30 years ago a local ironworker spent much money at a small refinery in Wednesbury in an attempt, which at the time was thought to be successful, to make steel. His success was not, however, complete.

—Wolverhampton Chronicle.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Aug. 7.—The Bristol and South Wales Wagon Company (Limited) announced a dividend at the rate of 10 per cent. per annum, which must be deemed satisfactory in the face of the present depression in trade. Branches of the National Bank of Wales have been opened at Neath and Tredegar, in the counties of Glamorganshire and Monmouth respectively. The Canton extension of the Cardiff Tramways Company has been opened during the past week. An improvement has been made at the Bute Docks, Cardiff, by the opening of a timber float between the East and West Dock, which will, no doubt, greatly facilitate business. During the past few days Mr. C. W. Whalley, contractor, of Chepstow, has lifted the Port Talbot Railway Station 2 ft. by means of screw jacks; and subsequently removed the building several feet on the up platform. The reduction on the Taff Vale Railway effects about 1400 employees, and the decrease is to be 5 per cent. A section of the men have already expressed their willingness to accept the reduction.

Readers of the Journal will probably remember the accident at the Cwmavon Colliery, when several men were killed by falling to the bottom through the rope attached to the cage breaking. The engineer was Benjamin Jones, and he has been tried at the Glamorgan Assizes for manslaughter. The jury returned a verdict of "Not guilty," and Mr. Jones was discharged.

Messrs. Paton and Co have recently purchased the Crumlin Viaduct Works, and it is satisfactory to announce that a re-start has been made at these works. For many years the works have been celebrated for the manufacture of bridges and girders, and going with the times, the new proprietors have resolved on devoting special attention to utilising steel in the manufacture of the products above named.

The Iron Trade of the district has altered but little, but the same gratifying report as to shipments can be noted. During last week Newport alone cleared over 7000 tons of iron. There are still reported to be enquiries on American account. During the past few days shipments have been mostly to Canada, South America, and Eastern Europe; and the Ebbw Vale works, judging from the quan-

city cleared on account of the company, appear to be a little more briskly employed. In fact, at one or two prominent works in the district there appears to be a little more doing; yet the great battle which masters have to fight is against the low prices which they obtain, and which seem to show no prospect of improvement. There is a fair amount doing at the Landore Steelworks, as times go. Bessemer steel rails are reported as in fair request, but as usual rates are unaltered. Railway iron is dull, and bars are far from being active. Notices to terminate contracts in a month have been posted at the works of Messrs. Booker and Co. (Limited). It is believed these mean a temporary (at least) cessation of operations. It has been resolved to enforce a reduction in the wages of the men employed in the local tin-plate works. A meeting of men has been held at Newport, at which they determined to resist any reduction, but would submit to arbitration. The general position of the trade is not quite so satisfactory. The demand is not so good, and prices are not so well kept up; thus it behoved masters to be stirring.

As for the coal trade it must be admitted that things look a little better, not that there has been any change for the better in prices, far from it, but the demand is steadily increasing. This remark applies especially to steam qualities, shipments of which are again looking up. There is also a moderately good demand for house coals. Freight rates, however, complained of as low. The demand for patent fuel shows a slight alteration for the better.

At Tredegar Police Court, on Tuesday, Mr. Richard Donald Baine, Assistant Inspector of Mines, preferred a charge against Danie Powell, James Jacob, William Williams, and Henry Tittle, owners of Pontyforest Colliery, near Beaufort, of having infringed the 20th section of the Mines Regulation Act by neglecting to provide a second outlet as required by law. Mr. Plews conducted the prosecution, and Mr. Gwynne Powell, of Ebbw Vale, solicitor, appeared for the defence. Mr. Baine visited the colliery, or level, on April 25, and found no second outlet. Mr. Baine called the attention of some of the officials to the neglect, and did not find any change on visiting the place again on July 9. Mr. Powell contended that defendants were not liable, as the information ought to have been laid within three months of the alleged offence being committed. After hearing Mr. Cadman, the Bench imposed a fine of 10s. and costs against each defendant. The colliery belongs to the Nantyglo Company, and defendants only commenced the search for coal in November last.

THE CWMAYON COLLIERY ACCIDENT.—The Cwmavon Colliery accident, which has gained considerable notoriety by the notice drawn to it in the House of Commons, engaged the attention of Mr. Justice Manisty and a jury yesterday, at the Assizes held at Swansea. The case was peculiar, and of great importance to the mining community. The facts are briefly these. On June 24, six men were in a pit-cage, with a view to descend to the workings of the Meadow Pit, belonging to the Cwmavon Colliery Company, when the rope broke, and they were precipitated to the bottom. It is not known whether they were killed by the fall or drowned in a sump at the bottom of the shaft, but this, as explained by Mr. Morgan Lloyd, Q.C., for the prosecution, was not material. The jury were asked to say if the mechanical engineer of the colliery, Benjamin Jones, was guilty of negligence to the extent of making him liable to a conviction for manslaughter. The Meadow Pit, it appears, is 185 yards deep, and in what miners call a wet one; and the natural effect of moisture on a pit rope is to corrode the wire, and necessarily weaken the chain. It was proved in evidence that the attention of the accused had been called to defective parts in the rope; that he had examined such parts while the rope was in motion; and that, on the whole, he was a careful and painstaking man. The breakman, who descended by the rope daily, declared that he thought it safe, and Mr. Wales, the Government Inspector, admitted that the rope had not had very much to do, although he thought the accused must have seen its defective state had he made an examination as carefully as was his duty.

The Mines Regulation Act is most emphatic on the point. According to a well-known rule, the mechanical engineer of a colliery should have the inspection and supervision of all machinery belonging to a mine, and it is his duty to maintain the same in good repair and order; it is prescribed that he should every day, if no other competent person be appointed to the duty, carefully examine the machinery and structure used for the lowering or raising of anything in the mine, and on a defect being discovered a report should at once be made to the manager, when the defective apparatus should be put out of use until repaired. The jury were asked to say if Benjamin Jones, the mechanical engineer at Cwmavon Colliery, had fulfilled the duties prescribed by law. If not, he was guilty of manslaughter. If he had simply made a mistake, or there was a latent fault in the rope, then he was entitled to the benefit of the doubt. The jury took the merciful view, and declared Jones not guilty, who was thereupon discharged. In the Cwmavon accident, as in the Tynewydd entombment case, the counsel for the defence made much of the fact, that although the country pays an Inspector to inspect mines, so as to prevent accidents, the Government official is only wise after the event. Such an argument is most effective with a miscellaneous jury, and yet it amounts to little. A Government Inspector cannot know everything, so as to foresee and prevent disasters. If he were so gifted, and his gifts were to be solely relied on, where would the responsibility of colliery officials be? The verdict of the Coroner's jury, confirmed as it has been by an Assize jury, will likely give rise to some cautious comment, inasmuch as it will be taken to mean that there is no redress for the death of the six unfortunate men referred to. It has long been a complaint against Welsh juries that they are unwilling to condemn a man who has erred from an error of judgment only. Somebody, no doubt, must be blamed, in the abstract, for the Cwmavon accident; but a Welsh jury takes a large view of personal responsibility, and pronounces "Not Guilty," when they really mean that the charge of neglect should be laid against more than one. Such was the view of the Coroner's jury, and a similar line of thought, we suspect, influenced the Assize jury in the verdict they recorded. In other words, they looked on Benjamin Jones as a scape-goat, and on their consciences refused to sacrifice him. In law and in equity a jury are supreme, and while we accept the verdict as final, we hope the Assize trial will have the effect of making mechanical engineers at collieries more than ordinarily careful in the interests of men's lives. —*South Wales Daily News.*

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Aug. 7.—The Liverpool Town Council have, by a vote of 36 to 8, decided in favour of the scheme for supplying the town with water from the upper streams of the River Vyrniew, in North Wales. This decision, which is practically an unanimous one, is, I think, a wise one. Two other plans were before the council—one for deriving the supply from Hawkeswater, and the other for obtaining it from deep wells sunk in the New Red Sandstone on which the town is built. There were several serious objections to be raised against this last scheme. First, the water derived from such sources is hard, being charged with carbonate and sulphate of lime. It is, therefore, unfitted for manufacturing purposes, particularly so for use in sugar refining, which is, and which with suitable water may become more so, an important branch of industry in the town. Secondly, there was the very important fact that to a considerable extent the sewage of the town leaked and filtered through the cracks and pores of the sandstone into some of the wells already sunk; and, thirdly, there was the grave doubt whether a sufficient supply could be derived from this source. Some of the wells have at the first yielded a large daily supply, which has after a time sensibly declined. Besides, half-a-dozen wells, if sunk, could not be expected to yield six times the quantity yielded by one, because they would all tap the same source, or partly so. The choice, therefore, lay between Hawkeswater and Vyrniew. The quality of the water from both these sources is much the same, being derived from slaty rocks with their associated greenstones and porphyries, and consequently being free from lime. Of the two, the water of Hawkeswater was the most turbid and discoloured after rain. The drainage also was less, and more populated than that of the Vyrniew, and the latter was 20 miles nearer to Liverpool. Already a working committee has been formed to prepare the scheme for the consideration of Parliament. It is a gigantic scheme. It is proposed to move the village of Llanwyddyn, with its 30 houses and church, to a dam up the lower contracted end of the valley, where the stratigraphical formation is very valuable; to form a lake five miles long from half a mile to one mile wide, and about 100 ft. deep. It will, of course, be costly. There will be compensation to landowners required for the surrender of mineral rights, as well as for those of the surface, in addition to the actual cost of the works. The conservators of the Severn will also, doubtless, have something to say. With reference to their rights, I would at once say that by a careful storage of the water in wet seasons the Severn may derive an equal, and certainly a more equitable, supply from this part of its water shed than it does at present. I think that the route of the proposed conduit will have to be altered, and I would advise the promoters to abandon their idea of impounding the upper streams of the River Tanat, in addition to those of the Vyrniew. This supplementary work is not necessary, and if persisted in will double the amount of opposition to the scheme.

Passing by a long stride to the south of Cardigan and the adjacent

parts of Pembroke and Carmarthen, the development of the slate quarries of that region is steadily and satisfactorily progressing. At the Elwyn Valley Quarry the rock improves in depth, and good slates and slabs are being made. At Pencelly Quarry the same remark is true, and the rock, which near the surface was soft, becomes sufficiently hard under the high ground to the south-west, while the tunnel which is to tap the lowest floor is steadily advancing. At the Cleddau Valley a new start has been made to develop the trade of the quarry. A good part of the heaviest work has been done, and a great depth of good grey-green slate rock proved. The Llanfrynach Lead Mines work steadily, profitably, and unobtrusively. A new discovery of lead ore, which may lead to important results, has been made in the neighbourhood of Tre-Hir Slate Quarry, which is worked by Mr. William Bishop, of Rose Hill. A lode of from 10 to 12 feet wide, of comby, drusy, gossany quartz, has been laid bare, which contains three or four strings or courses of lead ore. It will be interesting scientifically as well as commercially if the lead-bearing strata of Cardigan and Montgomery are found to be productive of ore in their south-western extension into Carmarthen and Pembroke.

It was the letter bearing Mr. Knapp's signature that I referred him to in my report a fortnight since. Of course, if he tells us that the letter is not his, and that the signature is a forgery, he, the Editor, and I have all been victimised, consequently there is no need for Mr. Knapp to go on calling names, the more especially as we have not all been born as clever as he.

[For the remainder of General Correspondence, see page 795.]

CORNWALL.

IN THE MATTER OF THE COMPANIES ACTS, 1862 AND 1867, AND OF THE PENSTRUTHAL CONSOLS TIN AND COPPER MINING COMPANY (LIMITED). IN LIQUIDATION.

MR. JOHN THOMAS, Auctioneer (of Redruth), has been instructed by the Liquidators appointed to wind-up the above company, TO SELL, BY AUCTION, as a going concern, at the Guildhall Tavern, Gresham Street, London, on Tuesday, the 19th August, 1879, at Twelve o'clock noon precisely, all the company's INTEREST in the several BETTS or LEASES of the PENSTRUTHAL CONSOLS MINES, Situate in the parish of Gwennap, in the county of Cornwall, together with the WHOLE OF THE

MACHINERY, PLANT, AND MATERIALS THEREON.

The sets comprise ground which is immediately contiguous to Tresavean, Wheel Buller, and other well known mines. The machinery and plant comprise a 50 inch cylinder PUMPING ENGINE, equal beam, 10 foot stroke, and ONE 10 ton BOILER; a 31 inch cylinder STAMP ENGINE, with ONE 10 ton BOILER, and 32 lifters and heads; ten circular huddles, two tram-wagons, and about 8 fms. tramroads and rails, &c., &c. The whole in good working order, and equal to all requirements for the continued working of the mines.

For particulars, apply to the Liquidators, care of Mr. EDWARD ASHMEAD, Public Accountant, 62, Cornhill, London; the Auctioneer, Mr. JOHN THOMAS, Redruth; or to the Agent on the Mines.

CARDIGANSHIRE.

In the parish of Llanbadarn-Fawr, about five miles from Aberystwith, and two miles from Bow Street Station, on the Cambrian Railways.

A HIGHLY DESIRABLE AND COMPACT FREEHOLD ESTATE OF ONE HUNDRED AND THIRTY TWO ACRES.

Comprising an excellent FARM of 100 acres, known as RHOSGOCH, in the occupation of Mr. John Jones; also a small FARM of 17 acres, called GWARWOM, in the occupation of Mr. David Lewis; and the freehold GROUND RENTS and REVERSIONARY INTEREST IN ELEVEN LEASEHOLD COTTAGES.

MR. G. T. SMITH is instructed to SELL, BY PUBLIC AUCTION, at the Belle Vue Hotel, Aberystwith, on Wednesday, the 27th day of August, 1879, at Three o'clock in the afternoon, the above property, which is bounded by the estates of Sir Pryse Pryse, Bart., the Trustees of the late T. O. Morgan, Esq.; J. W. S. Bensall, Esq.; and others.

It will first be offered in One Lot, and if not so sold, the two farms will be put up together, and each leasehold separately. The property is in the immediate neighbourhood of Bronfloyd and other mines, and valuable deposits of lead ore are believed to lie underneath the estate. Plan and particulars, with conditions of sale, will shortly be ready, and may be obtained from Messrs. TALBOT and WOOLHAM, Solicitors, Newtown; EVAN POWELL, Land Agent, Llanidloes; or from the Auctioneer, Aberystwith.

IMPORTANT SILVER-LEAD MINE FOR SALE.

TO BE SOLD, BY AUCTION, within Dowell's Rooms, No. 26, George's Street, Edinburgh, on Wednesday, the 10th September, 1879, at Two o'clock P.M., that—

VALUABLE SILVER-LEAD MINE,

Situated in the ISLAND OF BARDINIA, called GIBBAS. The sett, which is extensive, is within a mile of Porto Corallo, where the mineral is shipped in barges, and is distant about thirty miles from Cagliari, to which there is a good Government road. There is a full equipment of pumping, drawing, and dressing machinery on the mine.

SHORT REPORT.

"Llanbadarn, Cardiganshire, 1st August, 1879. "Having had charge of the Gibbas Mine during the campaign of 1877-8, and being well acquainted with the metalliferous features of the sett, I am of opinion that with a moderate outlay judiciously applied the mine will produce large and profitable returns of lead ore. (Signed) S. Y. DUNN. For particulars, apply to Mr. JAMES MARTIN, C.A., 49, Castle Street, Edinburgh; or to Messrs. GILLESPIE and PATERNON, W.S., 81A, George Street, Edinburgh, Scotland.

GUNPOWDER MILLS FOR SALE.

TO BE SOLD (as a going concern), VALUABLE GUNPOWDER MILLS, situate in the WEST OF ENGLAND, consisting of Mills worked by steam and water power, equal to the production of THREE HUNDRED TONS OF POWDER PER ANNUM, with all proper and convenient houses for storage and manufacture. There is also an excellent saw mill attached to the property.

These Mills have been erected about twelve years, and are supplied with Machinery of the most modern description. They are situate about two miles from a seaport, and the same distance from a railway station, with easy carriage to both. The grounds on which the mills, &c., are erected are held for terms of years, at very moderate rates.

For cards to view, and for all further information, apply to— Mr. CHILCOTT, Solicitor, Truro.

COLLIERY PLANT.

HOWARD'S WEST HARTLEY COLLIERY, NETHERTON, NEAR MORPETH, NORTHUMBERLAND.

FOR SALE, the PLANT, &c., of the above COLLIERY, consisting of—300 tons 75 lbs. D.E. IRON and STEEL RAILS, with CHAIRS, FISH-PLATES, POINTS, and CROSSINGS; 300 tons 18 lbs. BRIDGE and 28 lbs. EDGE RAILS; 400 CHALDRON WAGONS, wheels W.I. tyres; WINDING, PUMPING, and HAULING ENGINES; HORIZONTAL ENGINE, 18 in. cylinder; GUBBAL FAN; sets of 18 in., 17 in., and 19 in. PUMPS, complete; 3 in., 5 in., 8 in. FLANGE and SOCKET PIPES; FOUR LOCOMOTIVE ENGINES; SIXTEEN BOILERS, double flue and egg-ended cylinder; COAL TUBS; STONE TIP WAGONS; 18 in. LATHE, and usual MATERIAL about a Colliery.

Apply to WEAR and COLLEY, 32, Broad Chare, Newcastle-upon-Tyne.

FOR SALE (on account of the death of the proprietor),—THE RHOS ANTHRACITE COLLIERY, LLANELLY, SOUTH WALES.

Connected with the Railway System of the country, and with the Ports of Swansea and Llanelly. This Colliery with the present low price of coal is worked at a fair profit. Also, the GORSGOCH COLLIERY and BRICKWORKS.

For particulars, apply to W. ROSSER, Esq., Civil and Mining Engineer, Llanelly, South Wales.

TO BE LET, with immediate possession, and direct from the Proprietor, a VERY VALUABLE

ANTHRACITE COLLIERY,

Situate in the Vale of Neath, Glamorganshire. The colliery is in thorough working order, and a new winning has just been effected very near to the levels mouth. The area of coal unworked is very extensive, and of excellent quality.

For further particulars, apply to Mr. T. B. ALLISON, Aberpergwm Estate Office, near Neath, Glamorganshire.

FOR SALE, a NEW 70 inch cylinder CORNISH BEAM PUMPING ENGINE, 10 ft. stroke in cylinder and ft. in the shaft, with steam case, metallic piston, and wrought gudgeon. The false cover, perpendicular pipes, weigh posts, working and nozzle gear all fitted bright. A strong substantial well made engine, complete, including cast-iron casings for top and bottom nozzles with bright covers, holding down bolts and wrought-iron caps and bolts for connection to main rod.

Apply to WILLIAMS'S FERRAN FOUNDRY COMPANY, Ferranworthall, Cornwall. Dated Jan. 29, 1879.

BONA FIDE AND SAFE INVESTMENTS.

ROCHE FELSPAR COMPANY (LIMITED), AND BELL TIN AND COPPER MINE (LIMITED).

These SHARES cannot fail to TAKE A PROMINENT POSITION in the MARKET shortly, and a great advance in price. See Mining Journal of the 7th for the report of the recent discovery of feldspar, and this day's Journal for the analysis of the spar.

For full particulars and prospectus, apply to T. R. PARKIN, Jun., Finsbury House, Roehke.

STEEPERTON MINING COMPANY

(LIMITED). IN LIQUIDATION.

TENDERS will be RECEIVED by the undersigned until the 21st August next for the PURCHASE, in One Lot, of the LEASE, MACHINERY, AND ALL MATERIALS OF the STEEPERTON TOR MINE, situated near Belstone, Okehampton, Devonshire. ALEXANDER MOSSES, Liquidator, 54, Gracechurch Street, London, E.C.

ON SALE, in consequence of improvements, CAPITAL GALLOWAY BOILER, 26 ft. by 6 ft. 6 in.; CAPITAL LANCASHIRE BOILER, 24 ft. 3 in. by 6 ft. 6 in., both complete with mountings; left off working at 55 lbs. pressure. HORIZONTAL ENGINE, cylinder 5 in. by 3 ft. stroke, with governor and feed pump. TWO STEAM CYLINDERS, with pistons and connecting rods, 12 in. bore by 2 ft. stroke. Apply to WILLIAM C. PAGAN, Engineer, 12, St. George's Crescent, Liverpool.

HORIZONTAL ENGINE, 15-horse power, strong, and well finished, with fly-wheel, wrought crank shaft 5 in. diameter, and massive box bed; suitable for winding or general purposes; quite new. Price £70.

HORIZONTAL ENGINE, 8 in. cylinder, beautiful and most improved design, new and complete, with pump and governor. £35.

ALEXANDER SMITH ENGINEER DUDLEY WORCESTERSHIRE.

18 H.P. PORTABLE STEAM ENGINE, with link motion reversing gear, ready for delivery; also gear to wind and pump. A 9-h.p. VERTICAL STEAM ENGINE, with link motion, reversing gear (winding drum if required). A 6-ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER, with carriage and travelling wheels. Apply to—BARROWS AND STEWART, ENGINEERS, BANBURY.

22 IN. AIR COMPRESSOR, on massive bed-plate, with slide bars, connecting rods, and crank, FOR SALE (CHEAP). Improved AIR COMPRESSING ENGINES, with 12 and 9 in. cylinders. Also PAIR OF 9 inch WINDING ENGINES complete, with 4 feet drum, geared 3 to 1. Apply to—WARSON AND HILL, ENGINEERS, NOTTINGHAM.

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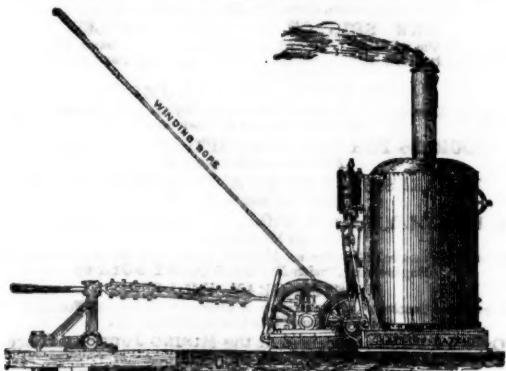
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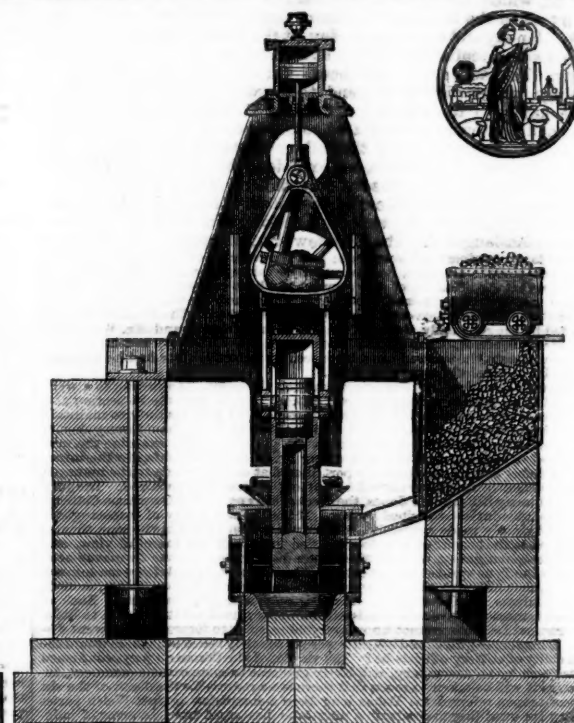
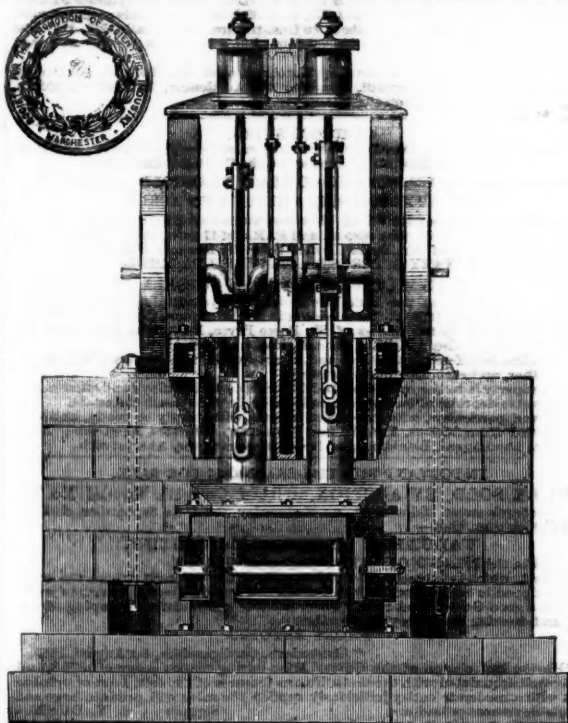
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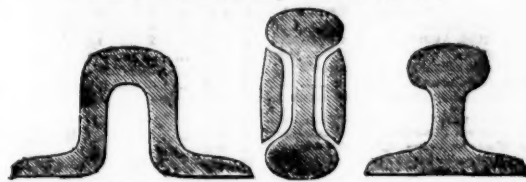
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512 South Cardow, s. i., St. Cleer.....	1 0 0	—	—	—	—	—
512 South Cardow, s. i., St. Cleer.....	1 0 0	—	—	—	—	—
512 South Cardow, s. i., St. Cleer.....	1 0 0	—	—	—	—	—
512 South Cardow, s. i., St. Cleer.....	1 0 0	—	—	—	—	—

FOREIGN DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
35500 Alamos, i., Spain.....	2 0 0	—	—	—	—	—
50000 Almaden and Trito Consol., s. i.....	1 0 0	—	—	—	—	—
90000 Australian, s. i., South Australia.....	7 7 6	—	—	—	—	—
10000 Battle Mountain, s. i., (2400 part pd.).....	4 0 0	—	—	—	—	—
15000 Birdseye Creek, s. i., California.....	4 0 0	—	—	—	—	—
90000 Cape Copper Mining, s. i., Cape.....	4 0 0	—	—	—	—	—
34438 Cedar Creek, s. i., California.....	2 0 0	—	—	—	—	—
35000 Cesena Sul. Co., Romagna, Italy.....	10 0 0	—	—	—	—	—
15000 Chicago, s. i., Utah.....	10 0 0	—	—	—	—	—
10000 Colorado United, s. i., Colorado.....	5 0 0	—	—	—	—	—
10000 Copiapo, s. i., Chile (420 shares).....	16 15 0	—	—	—	—	—
100000 Don Pedro North del Rey.....	1 0 0	—	—	—	—	—
28500 Eberhardt & Aurora, s. i., Nevada.....	10 0 0	—	—	—	—	—
10000 English & Australian, s. i., S. Aust.....	2 10 0	—	—	—	—	—
20000 Flanagan, s. i., Utah.....	10 0 0	—	—	—	—	—
20000 Fortuna, s. i., Spain.....	2 0 0	—	—	—	—	—
50000 Frontino, s. i., Spain.....	2 0 0	—	—	—	—	—
30000 Gold Run, s. i., New Granada.....	2 0 0	—	—	—	—	—
100000 Hercules and Ros, s. i., Colo., N.Y. pd.....	2 0 0	—	—	—	—	—
60000 Kapunda Mining Co., Australia.....	1 30 0	—	—	—	—	—
20000 Last Chance, s. i., Utah.....	5 0 0	—	—	—	—	—
15000 Linares, s. i., Spain.....	5 0 0	—	—	—	—	—
85000 London and California, s. i.....	2 0 0	—	—	—	—	—
50000 Mamm. Copperopolis of Utah, s. i.....	10 0 0	—	—	—	—	—
10000 Mountain Chief, s. i., Utah.....	10 0 0	—	—	—	—	—
10000 Pontebaud, s. i., France.....	20 0 0	—	—	—	—	—
100000 Port Phillip, s. i., Clunes (42 sh.).....	1 0 0	—	—	—	—	—
50000 Richmond Consols, s. i., Nevada.....	5 0 0	—	—	—	—	—
40000 Santa Barbara, s. i., Brazil.....	6 0 0	—	—	—	—	—
120000 Scottish Australian Mining Co., i.....	1 0 0	—	—	—	—	—
80000 Scottish Austral. Mining Co., New.....	0 10 0	—	—	—	—	—
22500 Sierra Buttes, s. i., California.....	2 0 0	—	—	—	—	—
40025 S. B. Plumas Eureka.....	2 0 0	—	—	—	—	—
4203000 St. John del Rey (42 stock & multiples dealt in).....	255 255	—	—	—	—	—
20000 Tollins, s. i., S. Americs.....	5 0 0	—	—	—	—	—
20000 Victoria (London), s. i., Australia.....	1 0 0	—	—	—	—	—
15000 Western Andes, s. i., New Granada.....	5 0 0	—	—	—	—	—
21000 W. Prudhoe (8500 pref. sh. 10% pd).....	10 0 0	—	—	—	—	—

NON-DIVIDEND FOREIGN MINES.

NON-DIVIDEND FOREIGN MINES.						
Shares.	Paid.	Last Pr.	Clos. Pr.	Last Call.		
12000 Argentine, s. Argentine Republic.....	5 0 0	—	—	—	—	7000 P
3000 Blue Tent, s. i., California.....	5 0 0	—	—	—	—	80 P
10000 Buena Ventura, s. i., Llane de las Infantas, Spain (22 sh.).....	0 15 0	2½	2 3¼	—	—	8000 P
15000 Canada, s. i., Canada.....	2 0 0	—	—	—	—	12000 P
49935 Chontalejo, s. i., Nicaragua.....	1 0 0	—	—	—	—	12000 P
75000 Colombian Hydraulic, s. i., Colombia.....	2 0 0	—	—	—	—	12000 P
16000 Condes de Chila, s. i., Colombia.....	1 0 0	—	—	—	—	612 P
20000 English Australian, s. i., Victoria.....	5 0 0	—	—	—	—	4000 R
35000 Execlior Hydraulic Gold Washing Co., California.....	1 0 0	—	—	—	—	8000 R
10000 Execlior, s. i., California.....	6 0 0	—	—	—	—	15000 R
100000 Frontino, s. i., Ontario Canada.....	1 0 0	—	—	—	—	4200 R
Holocho Valley, s. i., California.....	1 0 0	—	—	—	—	9 000 R
Horachos, s. i., Spain.....	1 0 0	—	—	—	—	30000 R
Hultafab, s. i., Sweden.....	10 0 0	—	—	—	—	6000 R
Hunter Consolidated, s. i., Utah.....	5 0 0	—	—	—	—	5000 R
Imperial Brazilian Collieries, Brazil.....	10 0 0	—	—	—	—	5000 R
Isabelle, s. i., California (220 shares).....	5 0 0	—	—	—	—	14000 R
I. X. L., s. i., California.....	5 0 0	—	—	—	—	6000 R
Javali, s. i., Nicaragua.....	1 0 0	—	—	—	—	6000 R
La Mancha, i., Newfoundland.....	2 0 0	—	—	—	—	927 R
Lusitania, Portugal (42 sh.).....	10 0 0	—	—	—	—	12000 Etes
Manzanilla, s. i., Germany.....	4 15 0	—	—	—	—	6000 Etes
Missouri Lead Mining & Smelting, s. U.S. pref. (10% sh.).....	4 0 0	—	—	—	—	10000 St.
New Benberg, s. i., Germany.....	4 0 0	—	—	—	—	10000 St.
New Quebec, s. i., Venezuela.....	4 0 0	—	—	—	—	18000 Sur
New Zealand Kapanga, s. i., Coromandel.....	5 0 0	—	—	—	—	30000 Tan
Nouveau Monde, s. i., Venezuela.....	5 0 0	—	—	—	—	40000 Tan
Oregon, s. i., Oregon, U.S. (preference shares).....	1 0 0	—	—	—	—	64000 Tel
Pataquillo, s. i., Chile (200000 debentures).....	4 0 0	—	—	—	—	10000 Tel
Pestana United, s. Italy.....	4 0 0	—	—	—	—	10000 Tel
Pitanguy, s. i., Brazil (int. 8000 s. £1 fully paid).....	3 0 0	—	—	—	—	12000 Tre
Placerville, s. i., California.....	2 0 0	—	—	—	—	4000 Tre
Providencia and New Rosario, s. i., Mexico.....	3 0 0	—	—	—	—	5000 Div
Ravenscliff, s. i., New Zealand, s. i., South Australia.....	1 0 0	—	—	—	—	10000 Van
000 Rio Tinto, s. i., Huella, Spain.....	0 0 0	—	—	—	—	18000 Vau
Rosa Grande, s. i., Brazil (21 shares).....	Stock	—	—	—	—	12000 West
Ruby and Dunderberg, s. i., Nevada.....	1 0 0	—	—	—	—	6000 West
Ute (10 p. c. debentures, convertible s. i., holder's option).....	10 0 0	—	—	—	—	8500 West
Russie Copper, Orenburg and Ufa.....	50 0 0	—	—	—	—	12000 West
Sentela, s. i., s. i., Arige, France.....	10 0 0	—	—	—	—	7000 West
Silver Plume, s. i., Colorado.....	1 0 0	—	—	—	—	12000 West
Tecoma, s. i., Utah.....	1 0 0	—	—	—	—	10000 West
United Mexican, s. i., Mexico.....	10 0 0	—	—	—	—	3000 West
Utah, s. i., Utah.....	20 0 0	—	—	—	—	50000 West
Virneberg, s. i., Rheinbreitbach, Germany.....	5 0 0	—	—	—	—	20000 W. of
Yorke Peninsula, s. i., South Australia.....	2 0 0	—	—	—	—	90000 West
Yorke Peninsula, s. i., South Australia Preference.....	1 0 0	—	—	—	—	10000 West

§ Have made calls since last dividend was paid.